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STEEL

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

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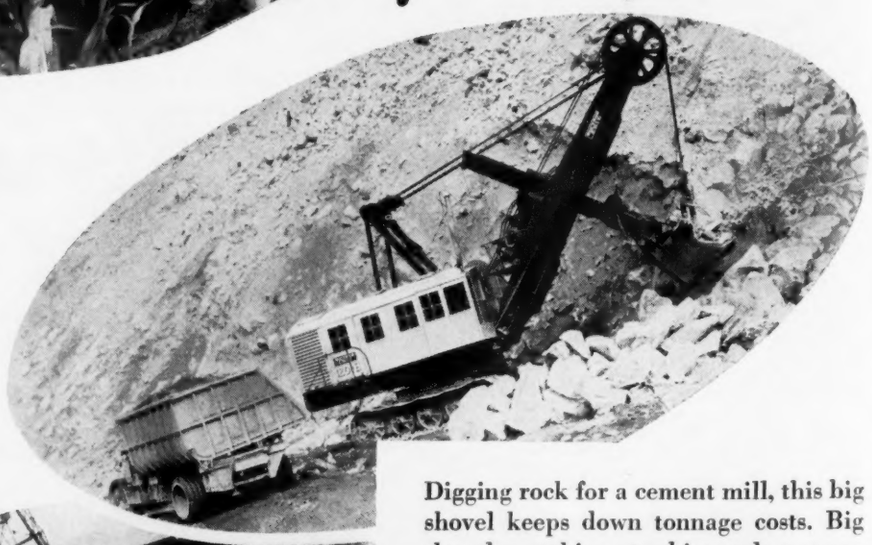
PRODUCTION · PROCESSING · DISTRIBUTION · USE

Plowing Corn...

Opening new markets for farm tractors, Allis-Chalmers designed this new Model B. With 9 HP drawbar pull, this tractor offers mobile, economical power for many industrial uses. Despite the moderate cost of this tractor, more than a dozen highly stressed parts are forged from long-wearing Nickel alloy steels.

...Digging Rocks



Digging rock for a cement mill, this big shovel keeps down tonnage costs. Big shovels, working at a big-yardage pace, need the extra strength and wear resistance of Nickel alloy steels. Bucyrus-Erie engineers developed a special Nickel alloy steel, similar to SAE 3135, and special heat treatments to achieve higher physical properties.

...or Damming Rivers

Grand Coulee, three times bigger than Boulder Dam, is being built with hoists which speed materials 550 feet aloft. Hoisting machinery is safeguarded by the extra strength of Nickel alloy steels. Paradox gates which plug the Columbia River, hold raging water and resist abrading silt, are made of Nickel alloy steels with tensile strengths from 80,000 to 110,000 p.s.i.

Your consultation regarding the uses of Nickel is invited.

Hard jobs Call for Toughness

ALLOY **NICKEL** STEELS

THE INTERNATIONAL NICKEL COMPANY, INC., NEW YORK, N.Y.

As the Editor Views the News

■ REGARDLESS of what the President's commission found important in British labor relations and applicable in this country (p. 19) it takes no intensive study to see that what labor here needs most today is to pay less attention to its squabbles and politics, and more to causes undermining its earning power. . . . Here we find that while the average hourly wage in the steel industry in the first seven months this year was 82.7 cents, slightly higher than in the period last year (p. 18), total payrolls this year were $275,000,000 less. The industry was anxious to pay it. Here we find more than a quarter billion dollars "gone with the wind"—when they might have gone to labor. Let labor leaders tell their constituents the reason for that.

• • •

A 23.3 per cent increase in daily average pig iron output, with addition of eleven more active blast furnaces in August (p. 20), a 1-point rise to 44.5 per cent in steelworks operations (p. 21), a moderate gain in automobile output, and larger structural steel purchases for public projects (p. 69) buoy sentiment . . . . From Detroit now comes news (p. 23) that automobile merchandising programs are being tempered with caution "until more can be determined." Farm income reports indicate to some manufacturers that the West will be their most fertile field for new car sales . . . . All public expenditures, less debt retirement, for the current fiscal year (p. 26) are estimated to equal the accountable income of all persons living west of the Mississippi.

Sunshine and Shadow

• • •

"Pounds" generally is set after figures relating to stainless steel sales, but makers and fabricators surveying the airplane industry (p. 15) are thinking in thousands of tons. They see the time, and that soon, when 5000 tons of stainless steel will be required in a 4000 to 5000-plane construction year, because of rapid increase in the proportion of the material used, and growing size and dominance of commercial craft. The 3773 units built in 1937 represented a gain of 25 per cent over 1936; and 1974 in the first half this year was 21 per cent over the number last year. . . . Railroads (p. 26) insisting on wage adjustments, call attention to their net operating income in the first half this year, $109,300,000, in contrast with $360,-450,000 in the first half last year; $450,900,000 in the six months of 1930.

Stainless Airplanes

• • •

Inland Steel Co. features in the engineering news of the week, having just started up its new 44-inch strip mill (p. 36), increasing its flat rolled steel capacity by 45,000 tons per month. Maximum delivery speed is 2200 feet per minute. . . . Scale models of production equipment (p. 44) aid in laying out new clutch plant, and are suggested for general adoption in design of fabricating lines. . . . Among new metal products (p. 49) appears a one-piece metal wall stud of original design. . . . Many interesting items of stainless steel dairy equipment (p. 52) are welded. . . . Unique type of melting furnace (p. 59) has shell inverted in an upside-down position over crucible. . . . New metal sawing machine (p. 62) swivels to permit angular cuts.

New Mill In Chicago

• • •

Automatic boiler control systems handle rapidly swinging loads (p. 40) with a combination of blast furnace gas and pulverized coal as fuel to maintain operation at high efficiency. . . . Cranes with special grabs in new warehouse (p. 47) afford economies in handling and storing steel sheet and strip. . . . A new process for coating brass, copper, iron, zinc and other metals (p. 48) is developed in England. . . . Continuous heat-treating furnaces (p. 56) in a tractor plant reduce costs and increase production. . . . New type of electric lamp utilizes fluorescence to produce light in various colors. Lamp operates at low temperature. . . . Brass plate is suggested as best method of obtaining rubber-to-metal adhesion (p. 39), using material with 60 per cent copper.

Combine Fuels

E. L. Shaner

Inland Research Scores Again

Ledloy—Another Metallurgical Achievement that Is Saving Money for Steel Users

Again, the pioneering of Inland metallurgical research has, in effect, put money into steel users' pockets.

The recently announced development of INLAND LEDLOY has enabled metal working plants to speed up their machining operations 30% to 60%. In terms of dollars, savings like the following examples are typical:

In the making of a case carburized worm shaft, $47.85 machining cost is being saved per ton of steel used.

The manufacturer of a socket ball control joint is saving $37.91 per ton by using Inland Ledloy 1120 instead of ordinary SAE 1120.

Finding ways of making better steel for each customer's purpose is the basis for Inland personal service. The occasional development of a new kind of steel, such as Inland Ledloy or Inland Hi-Steel (high tensile), merely emphasizes the extensive modern laboratory facilities which Inland makes daily available to all steel users.

Often but a small change in the surface characteristics of a steel sheet, or special control over its physical properties, makes a big difference in the costs and results of a forming operation; or the suggestions of an Inland engineer may help to save time and material in the use of structural steel.

More companies today than ever before are utilizing these special services to supplement their own technical staffs. We believe you would find this a worth-while practice to follow.

INLAND STEEL CO.

38 South Dearborn Street, CHICAGO • District Offices: DETROIT • KANSAS CITY • MILWAUKEE • ST. LOUIS • ST. PAUL

SHEETS STRIP TIN PLATE BARS PLATES FLOOR PLATES STRUCTURALS PILING RAILS TRACK ACCESSORIES REINFORCING BARS

■ **Steel takes to the air on a grand scale in the Douglas DC-4, reputedly aviation's "largest and most modern commercial transport land plane." Built to the order of the nation's five largest airlines, it is 138 feet, 6 inches from wing tip to tip; 97 feet, 7 inches long, and will seat 42 passengers and crew of five. Sleeping accommodations are provided for 30. Steel was used liberally in its construction, especially for highly stressed parts, and where particular corrosion resistance and high temperature stability are required**

Strong Trend Toward Use of Steel In Airplane Construction

■ AIRCRAFT of tomorrow will tend more definitely toward steel-alloy construction. Although steel already is playing a major part in airplane building, it is destined to assume an even greater role.

Steel mill metallurgists, working to perfect new aircraft metals, believe they have a suitable material in the stainless steels now available, reliable welding processes and greater technological knowledge. They predict that within a few years stainless steel will hold the center of the stage in aircraft construction. They visualize the all-steel airplane as common as the all-steel automobile.

How large a market will this mean? Estimated requirements of stainless steel alone for a 4000 or 5000-plane year would total approximately 5000 tons, on the basis of present aircraft size. This, of course, would be in addition to the considerable tonnage of other alloy steels.

Aircraft production in 1937 totaled 3773, a 25 per cent increase over 1936 production of 3010. In the first three months of 1938, production was 40 per cent greater than the first quarter of 1937. In the first six months of 1938, 1974 planes were built, compared with 1623 in the corresponding period last year.

Popular misbelief is that the proportion of ferrous alloys used in modern aircraft is so slight as to be negligible. This is not true. More than two dozen different kinds of steel are used. Steel comprises nearly 20 per cent of the basic structural weight of the modern 21-passenger transport plane of the type used both in this country and abroad. Additional steel is used in engines, propellors, starters, generators, and the like. The total in such a plane amounts to considerably more than a ton. The larger the plane, the greater the proportion of steel.

Weight Basic Problem

Basic problem of aircraft engineers is light-weight construction. However, light-weight construction does not necessarily mean the lightest material, but the best possible combination of density, strength-density ratio, and modulus-density ratio.

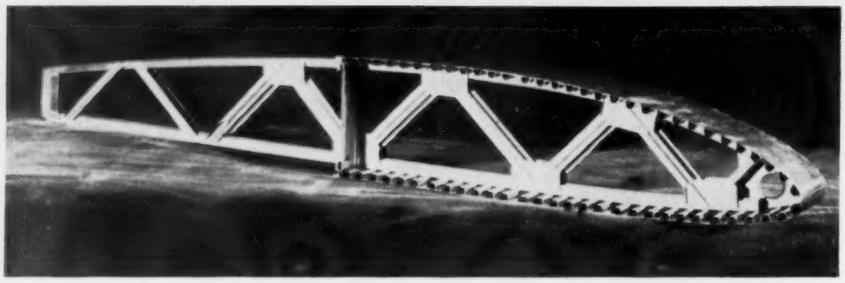
When these three significant properties are considered, wood, steel alloys and aluminum alloys are on about a par. Choice of material, then, is based on other considerations, such as ease of fabrication, resistance to corrosion, availability, reliable information based on structural tests and a knowledge of design which best will utilize particular application of the materials.

In the modern plane, of course, alloys of steel and alloys of aluminum account for virtually 100 per cent of the structural weight.

With the trend toward larger military and transport planes, the use of stainless and heat-treated alloy steels, which have an attractive modulus-density ratio, are playing an increasingly important part.

Stainless steel aircraft construction is not new. More than six years ago, Edward G. Budd Mfg. Co., built the first stainless steel plane, the Pioneer. Subjected to rigorous tests, flown three years by many pilots, then stripped of fabric and placed in front of Franklin institute, Philadelphia, it recently was dismantled and inspected, found to be in perfect structural condition.

First stainless steel plane built for



■ **Section of a stainless steel airplane wing fabricated by the Edward G. Budd Mfg. Co., Philadelphia, demonstrates possibilities of this metal in future aircraft construction. Tests of the new wing attracted interest of army, navy and private airlines engineers. Photo courtesy American Steel & Wire Co.**

commercial purposes was the Fleetwing Sea Bird. Launched two years ago at the Bristol, Pa., plant of Fleetwings Inc., this 4-passenger cabin amphibian has withstood severe tests, proved itself airworthy.

To aeronautical experts representing the army, navy and private airlines, recently was demonstrated at the Budd plant a stainless steel wing designed for the army's new Seversky pursuit plane.

Enea Bossi, head of the Budd aircraft division, has no doubts about stainless steel construction. He asserts a wing built of this steel will have the advantages of light weight, rigidity, high fatigue ratio to withstand vibration and resistance to corrosion. Among those watching the test were Pan American engineers for whom the corrosive effect of salt water has caused much trouble.

Says Mr. Bossi: "We in the Budd company are convinced, and I will venture to make the prediction, that transport planes in the future will be built of steel, just as ocean liners and trains are being built today.

"With all the advantages stainless steel has to offer, it will cost no more than metals commonly used at present. With the shot-welding method we have developed for fabricating it, stainless steel will enable manufacturers to turn out planes eight to ten times as fast as before. We have developed our processes to a point where their application to aircraft construction is highly practicable."

Aircraft manufacturing companies naturally are reluctant to turn to stainless steel construction because such change would necessitate an expensive re-tooling program. However, the airlines, the commerce department, the army and navy have become interested in the advantages of all-steel construction. Stainless steel manufacturers believe pressure from these sources eventually will cause airplane builders to adopt steel construction.

Proponents of stainless steel construction claim many advantages: Low material cost; minimum skilled labor required; low labor cost in production; and good quality of joints.

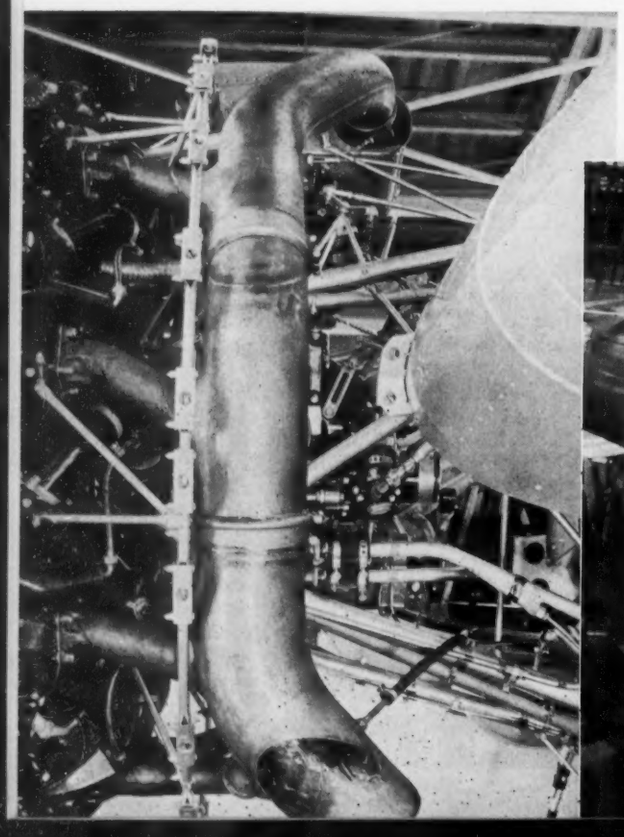
Other alloy steels also have been winning recognition in aircraft construction. Howard Hughes' recent globe-circling flight was followed by many announcements of new applications of steel. Among these were Wright engines with crankcases of steel. The new engines developed a total of 2200 horsepower. Without the steel crankcase they produced only 1000 horsepower. Though the new engine weighs more, it weighs less per horsepower produced. The heavier metal permits higher supercharging—greater combustion pressures in the cylinders.

Incidentally, 400 of the new type motors have been ordered to power the 200 high-speed bombers ordered from the Lockheed Aircraft Corp., Burbank, Calif., by the British air ministry.

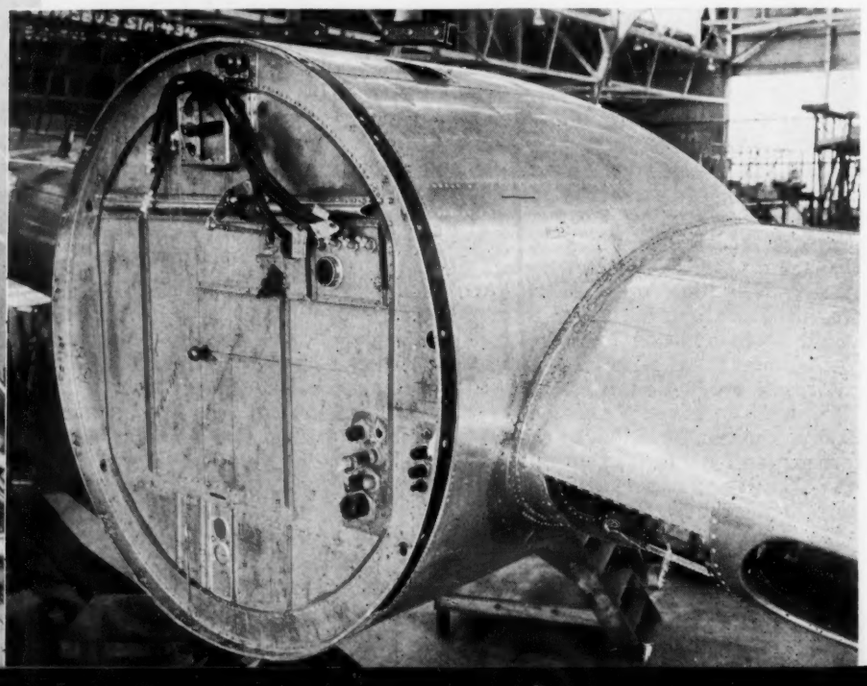
Of the many kinds of steel used in today's airplanes, most important in amount are the chrome-molybdenum and stainless steels. The former is used for highly stressed structural parts, such as engine mounts, fuselage, frames, landing gears, hinge fittings, etc., where welding is necessary and space is limited. Characteristics which recommend this steel are its high physical properties, availability, response to heat treatment, reliability of welds, machinability and ease of forming.

The number of feet of chrome-molybdenum tubing which has gone into the familiar welded steel fuselage rapidly is mounting to astronomical proportions.

Stainless steels now are used primarily where corrosion resistance



■ **Left: Welded stainless steel exhaust system for engine. Below: Engine compartment showing firewall of corrosion-resistant steel. Photos, courtesy of Glenn L. Martin Co., Baltimore, and Douglas Aircraft Co. Inc., Santa Monica, Calif.**



■ **First stainless steel airplane built for commercial purposes was the Sea Bird, launched at Bristol, Pa., plant of Fleetwings Inc., two years ago. A 4-passenger cabin amphibian, it required 1600 pounds of stainless steel, and due to the tremendous strength of the steel in proportion to its weight, it is 100 to 200 pounds lighter than even a land plane of comparable capacity**

and heat resistance are the important factors, as in exhaust collectors, manifolds, and stacks for engines, for fire walls behind engines, cables and other parts subjected to extremes in service.

Low magnetic permeability of 18-8 stainless steel makes it valuable for special purposes, particularly for use near a compass.

Excellent thread cutting properties of nickel steels recommend them highly for bolts, nuts, clevises, turnbuckle ends, flying wires and other threaded parts. Nickel steels necessarily are limited to parts which require no welding, as they cannot be welded satisfactorily.

With the trend to larger aircraft, the cross sectional area of highly stressed parts has increased rapidly and considerable difficulty has been met in obtaining uniform strength and hardness throughout the mass of large fittings and forgings.

Among the latest developments are the nickel-chromium-molybdenum steels such as SAE 4340 and SAE 4345. Outstanding advantage of these is their excellent depth-hardening properties, which make it possible to develop strength and hardness in large sections equal to that obtained in small sections of other steels. In addition they show good impact and fatigue resistance at high strengths, and ability to undergo satisfactorily higher heat treatment than 4130 and 4140 steels.

Depth-hardening qualities of SAE 4345 and its response to heat treatment make it ideal for large forgings and fittings, etc., where welding is not required.

Pieces of irregular shape and large mass can be oil quenched with a minimum of warpage and residual hardening strains. On reheating, the steel tempers at a slow rate thus permitting the use of higher drawing temperatures so that this steel combines high strength and high shock resistance. The higher drawing temperatures naturally decrease the possibility of cracking, warping and residual strains. Strains are relieved by the high drawing temperatures and, consequently, the steel is freer from temper brittleness.

Various types of nickel-chromium-molybdenum steels are being developed which, because of their adaptability, should find many applications in aircraft construction. Since on the average, they show high ductility and resistance to impact, their usefulness should include both large and small sections. Further advantages are their high ratio of yield strength to tensile strength and lower susceptibility to brittleness, the latter making them available for small sections while their favorable depth-hardening qualities recommend them in large sections.

Other types of steels are used for special applications such as springs, hardened and ground pistons and shafts, ball bearings, snap rings and some other parts.

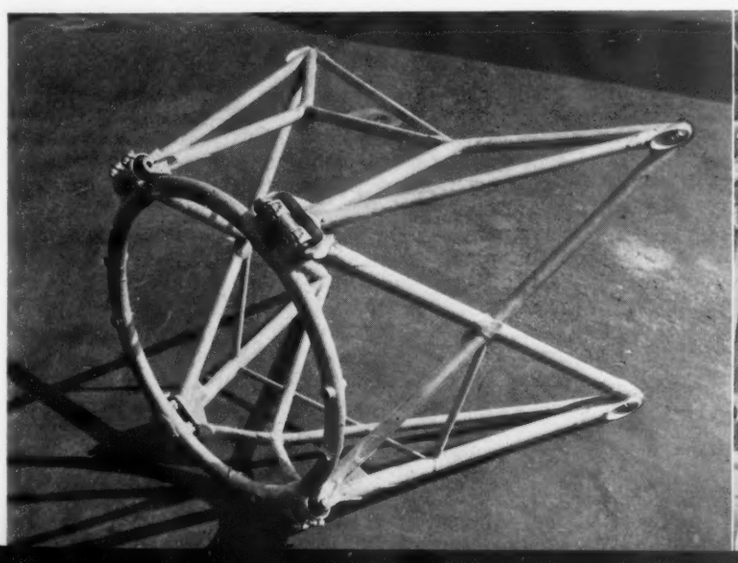
Steel castings are not widely used; however, there are indications their application may become more common.

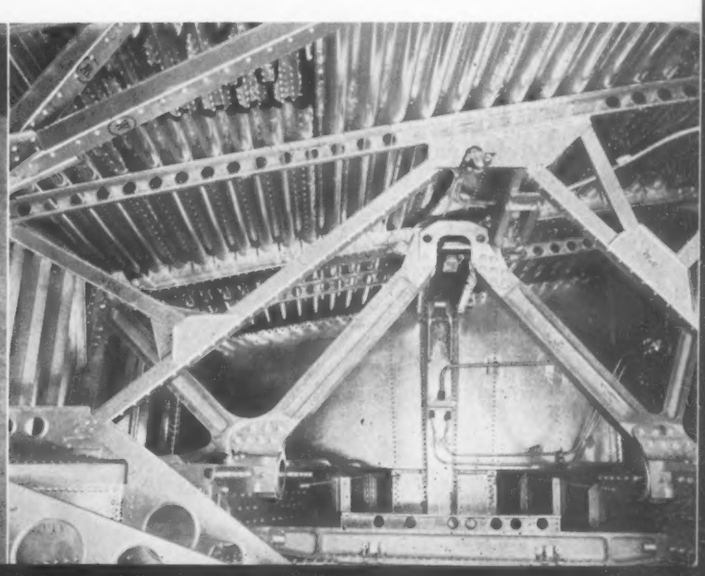
Alloys of nickel likewise are receiving more recognition. Two deserve special mention. Inconel, a nickel-chromium alloy, is being used where its high corrosion resistance and strength at both normal and elevated temperatures are advantageous. K Monel, nickel-chromium-copper alloy, is nonmagnetic, besides having good corrosion resistance, high strength and responsiveness to heat treatment.

Lightest of metals used in aircraft are the magnesium alloys, which are only two-thirds the weight of aluminum alloys. Their early disadvantages, rather poor corrosion resistance in presence of salt water, and an over-emphasized fire hazard,

(*Please turn to Page* 90)

■ **Left: Engine-mount frame of chrome-molybdenum steel. Right: Main landing gear showing steel fittings and attachments inside wing of the Douglas DC-4**





Steel Employment and Payroll Data

		Ingot Output Gross Tons	Number of Employes	Total Payrolls	Average Hourly Wages	Average Hours Per Week
1937	Jan.	4,718,436	547,997	$76,423,054	72.5	40.5
	Feb.	4,414,699	556,077	74,277,665	72.8	42.5
	March	5,218,326	577,050	90,863,016	79.3	42.5
	April	5,070,867	589,351	94,321,859	85.6	41.3
	May	5,151,909	595,354	92,931,305	86.6	38.6
	June	4,184,723	555,743	87,519,613	87.7	39.2
	July	4,556,304	593,906	90,549,660	86.8	37.3
	Aug.	4,877,826	603,106	92,663,389	86.1	37.9
	Sept.	4,289,507	602,729	86,160,875	84.3	36.8
	Oct.	3,392,924	586,644	76,191,149	83.1	31.9
	Nov.	2,154,365	551,158	62,119,455	82.1	27.6
	Dec.	1,473,021	508,000	52,062,000	81.7	23.4
1938	Jan.	1,732,764	475,000	47,578,000	80.5	22.9
	Feb.	1,703,726	461,000	45,599,000	81.3	25.0
	March	2,012,406	455,000	51,386,000	81.8	26.7
	April	1,925,166	445,000	47,809,000	82.6	25.6
	May	1,806,805	436,000	46,757,000	83.6	24.4
	June	1,638,277	424,700	46,706,000	84.5	24.3
	July	1,982,058	424,400	45,802,000	84.8	25.6

Wage Rates Constant, but Steel Payrolls $275,000,000 Under 1937

■ THE RECESSION cost American steelworkers more than a quarter billion dollars during the first seven months of 1938. Steel industry payrolls for the period were $275,000,000 less than in the corresponding period of 1937.

Reduction in payrolls directly reflects the lower rate of steelworks operations, 31.5 per cent, from January through July this year, compared with 84 per cent in the similar period of 1937. This necessitated a shorter work week.

Hourly wage rates remained comparatively constant. Average rate for the first seven months this year was 82.7 cents, slightly higher than the average for the like period last year, 81.6 cents.

Average work week in first seven months of 1937 ranged from 42.5 hours in February and March to 37.3 hours in July; in 1938, the range was from 22.9 hours in January to 26.7 hours in March.

Employment Drops

Total number of employes gained steadily in 1937 from 547,997 in January to 593,906 in July. During 1938, employment has diminished from 475,000 in January to 424,400 in July.

Ingot production for the first seven months of 1937 was 33,315,264 tons; in 1938, 12,801,202 tons.

Total payrolls were $606,886,000 in the 1937 period, $331,637,000 in 1938.

July payrolls amounted to $45,802,000, compared with $46,706,000 in June, according to the American Iron and Steel institute. Average hourly wages in July averaged 84.8 cents, against 84.5 cents in June. Number of employes was slightly lower than in June, 424,400 against 424,700, but they worked more hours per week, 25.6 in July and 24.3 in June.

MURRAY SEES NO STEEL WAGE CUT, HE TELLS PRESIDENT

Philip Murray, chairman, Steel Workers' Organizing committee, told President Roosevelt at conference last week, that in view of recent gains in operations he expected no wage reduction in the steel industry.

Murray later said employment problems in the steel and coal industries were discussed. He quoted the President as being "loud in praise" of the new United Mine Workers' contract with mine operators in Harlan county, Kentucky.

GRANITE CITY STEEL CUTS SALARIES 10 PER CENT

Granite City Steel Co., Granite City, Ill., recently announced a 10 per cent reduction for all salaried employes, effective immediately. The reduction applies to executives, clerical workers, supervisory employes and salesmen. Company's financial report for the first six months of 1938 showed a loss of $272,000.

WAGES TO BE REDUCED IF DOVER MILL REOPENS

Greer Steel Co. in a recent letter to employes announced a wage reduction averaging 12½ per cent would be made effective if its Dover, O., plant is reopened. The company's letter said reopening of the plant was contemplated "in view of the general pickup in the steel industry."

Hardships caused the company by readjustments in prices and basing point system and the consequent necessity for absorbing freight charges, it was stated, make mandatory the wage reduction.

"We will have to start in a small way and cannot re-employ all of our men at once," the letter read. Only a single turn, with preference to the oldest men in point of service, is planned at the start.

FLETCHER NAMED ASSISTANT WAGE-HOUR ADMINISTRATOR

Elmer F. Andrews, hours and wages administrator, late last week announced appointment of Arthur L. Fletcher, labor commissioner of North Carolina, as assistant administrator in charge of compliance. Fletcher will begin his job Sept. 15. He will be responsible for obtaining compliance with the wage and hour provisions of the fair labor standards act throughout the United States, through state agencies wherever possible.

Mr. Andrews said Friday that it will be "a long time" before the steel and automobile industries are considered by his office.

WINS LABOR BOARD ELECTION

The Aluminum Workers of America has been certified by the national labor relations board as exclusive representative of the production and maintenance employes of the Aluminum Co. of America at its Detroit plant. The board's action was based on the election conducted Aug. 9.

German and Czech Iron And Steel Output Drops

■ German pig iron production during June was 1,508,558 metric tons, compared with 1,545,062 tons in May, according to a report from the American consulate at Cologne. Active furnaces numbered 134 out of 170. Steel ingot output in June totaled 1,830,382 tons, against 1,896,764 tons in May.

Consumption of scrap in Germany has reached record proportions, estimated at 800,000 metric tons per month, of which 100,000 tons is imported.

Czechoslovakia's pig iron production in June was 110,300 metric tons, slightly above the May figure but 19 per cent below June, 1937. Ingot production in June was 1.7 per cent lower than in May and 13.9 per cent below June, 1937. For first six months of 1938 pig iron production was 698,000 tons, 13.4 per cent less than last year. For the same period ingot production was 993,000 tons, 10.1 per cent under first half last year.

Great Britain's Industrial Peace Ascribed to Three-Way Co-operation

■ THE LONG awaited report of the American commission on industrial relations in Great Britain was made public last week by the President with the suggestion to newsmen that they read all of it. It is a purely factual report, signed by all the members, and contains no recommendations.

Mr. Roosevelt said: "To me, the most salient feature of the report is the co-operative spirit, coupled with restraint, which is shown by those who represent both employers and employes in Great Britain. Collective bargaining is an accepted fact, and because of this the machinery which carries it out is functioning."

There runs through the report the indication that British labor, employers and government have a much better and closer working agreement than exists in the United States.

The commission calls attention to the fact that "improved industrial relations in Great Britain have been reflected in the trend of hours of work which have been reduced during the last 20 years, from 54 to 48 or in some cases less, and by the changes in the real wage level which for manufacturing and railways has risen approximately 16 per cent since 1924, according to the figures of the ministry of labor. These factors, together with improved machinery, better technology and improved organization of industry, have contributed to a higher standard of living."

Understanding Is Essential

Dealing with the collective bargaining question, the commission says "the acceptance and general practice of collective bargaining on an industry basis places upon the employers and workers organizations, because of the sheer numbers of men and the magnitude of interests involved, a peculiarly heavy responsibility calculated by its very nature to call forth patience, understanding, and a desire to make and keep agreements and to achieve industrial peace."

The commission states that it was informed by both workers and employers that the social legislation enacted during the present century has improved conditions in Great Britain, and has created an atmosphere in which harmonious employer and worker relations can be developed.

"How great or little this effect has been we do not attempt to say," states the commission. "The most important social legislation deals with unemployment insurance, old age insurance, medical aid with sickness compensation, and improved housing."

Reference is made in the report to the settlement of disputes between employers and employes, and the commission says that there are variations in the pattern but through all the agreements the principle is the same, "namely, that local disputes and grievances which cannot be settled locally are referred to employer and union representatives who are not themselves directly concerned with the controversy and who can bring to bear upon it an informed and relatively detached judgment. . . . .

Strikes Bring Little Violence

"For the most part the conduct of strikes has been accompanied, at least since collective bargaining became generally accepted, by relatively little violence or provocation. In the case of strikes involving at the outset enough workers to make continued operation of a plant impracticable, employers almost invariably shut down their plants and do not attempt to operate until the controversy has been settled by negotiation."

In connection with the gradual development of union organizations and employers' associations, and of the methods of collective bargaining between them the report states that "these methods have been evolved experimentally, and have been tested and from time to time modified, in the light of experience. Both sides have learned in the process, and their background of experience is an integral part of the present arrangements."

FINANCIAL

SHAREHOLDERS APPROVE SHEET & TUBE FINANCING

■ YOUNGSTOWN Sheet & Tube Co. shareholders at a meeting last week took action enabling the company to proceed immediately toward completion of its $30,000,000 financing program, proposed last fall but postponed due to business conditions. They waived pre-emptive rights for one year on not exceeding 500,000 authorized and unissued common shares, and empowered the board to confer upon holders of any securities which may be issued the right to convert such securities into common shares. They rescinded action taken last October in waiving pre-emptive rights on 400,000 shares.

Plans call for issuing $30,000,000 convertible 10-year debentures. Registration statement covering such debentures has been filed and negotiations with underwriters are now under way. It is anticipated the board may authorize issuance and sale early next month.

Proceeds would be applied as follows: $12,500,000 for repayment of existing bank loans, the remainder for additional working capital and for plant improvements in Youngstown and Chicago districts, including additional ingot and finishing capacity, and replacement of certain units in the Indiana Harbor plant. (For details of registration statement relating to improvements see (STEEL, Aug. 22, p. 30.)

Directors recently declared the regular preferred dividend of $1.37½ per share, payable on Oct. 1, to holders of record Sept. 10.

* * *

Continental Steel Corp. declared a dividend of $1.75 a share on preferred stock, payable Oct. 1, to record of Sept. 15.

* * *

Barium Stainless Steel Corp., Canton, O., has applied to the New York curb exchange for additional listing of 370,390 common shares, bringing the total outstanding to 802,790 shares.

* * *

Pittsburgh Coke & Iron Co., Pittsburgh, has acquired 93,920 shares, or 47 per cent, of the common stock of Hunter Steel Co., Pittsburgh. The company also has acquired warrants to purchase an additional 46,960 common shares, and has entered into an agreement with G. L. Ohrstrom & Co., New York, pursuant to which each of them will surrender to the Hunter company for cancellation stock purchase warrants covering 21,760 common shares. Hunter has 200,000 shares of no-par common stock outstanding.

* * *

Directors of Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., have declared a regular quarterly dividend of $1.50 a share on the $6 preferred stock. The dividend is payable Sept. 29 to stockholders of record Sept. 9.

* * *

American Rolling Mill Co., Middletown, O., has deferred action on the preferred dividend requirements. A company statement attributed this to losses before dividends during the first six months this year and continuing losses at present.

■ Iron mining in the southern part of Missouri has been resumed after several months' idleness, according to G. E. Doane, Chapman & Doane Mining Co., Poplar Bluff, Mo. Six mines have been reopened in Wayne county, and others in Butler and surrounding counties will resume soon. Ore is marketed to southern furnaces.

August Iron Output Best This Year; 11 Stacks In

■ REGISTERING a gain of 23.3 per cent, production of coke pig iron in the United States in August set the high point for 1938. Although no month this year has reached 1,500,000 tons, August missed this mark by only a narrow margin. The upward swing in production, starting in July when 10 blast furnaces resumed action, was helped along by the blowing in of 11 more stacks in August. The 88 furnaces making iron at the close of the month was the highest since March with 90.

Average daily production in August was 48,234 gross tons, an increase of 9103 tons, or 23.3 per cent, compared with the July rate of 39,131 tons. This was the highest daily output since December, 1937, with 48,499 tons. August, 1937, daily production averaged 116,676 tons.

Total production in August was 1,495,245 gross tons, a rise of 282,169 tons, or 23.3 per cent, over the July total of 1,213,076 tons. This was the largest production for any month since December, 1937, when 1,503,474 tons was produced. Total output for August, a year ago, was 3,616,954 tons.

Production for first eight months of this year totaled 10,639,419 gross tons, a decrease of 16,250,229 tons, or 56.5 per cent, compared with production of 26,889,648 tons for the like period in 1937. Total output to September 1 in 1936 amounted to 18,887,519 tons.

Relating production to capacity, operations in August averaged 34.8 per cent, compared with 28.2 per cent in July; 25.4 in June; 29.4 in May. This was highest figure since December, 1937, with 35.6 per cent. August, 1937, operations were at a rate of 85.7 per cent.

Active blast furnaces on August 31 totaled 88, a gain of 11 over the 77 reported operating at end of July. This was the largest number since the March figure of 90 and compared with 67 in June; 73 in May; 79 in April. A total of 191 were in operation at end of August, a year ago.

During August, two steelworks and two merchant stacks were blown out or banked. Thirteen steelworks stacks and two merchant units resumed, to make a net increase of 11 furnaces.

Furnaces blowing in during August were: In Ohio: Ohio No. 3 and Carrie No. 7, Carnegie-Illinois Steel Corp.; Lorain No. 1, National Tube Co.; Portsmouth, Wheeling Steel Corp.; Jisco, Jackson Iron & Steel Co. In Pennsylvania: One Cambria, Bethlehem Steel Co. In New York Donner No. 1, Republic Steel Corp. In Alabama: Ensley Nos. 1, 2 and 3, Tennessee Coal, Iron & Railroad Co.; one Pioneer and Alabama City, Republic Steel Corp. In West Virginia: Riverside, Wheeling Steel Corp. In Michigan: One Detroit, National Steel Corp. In Indiana: One Madeline, Inland Steel Co.

Stacks blowing out or banking were: In Pennsylvania: Monongahela No. 3, National Tube Co. In New York: Standish, Chateaugay Coal & Iron Co.; one Buffalo, National Steel Corp. In Colorado: Minnequa, Colorado Fuel & Iron Co.

With blowing in of the new "C" furnace of Hanna Furnace Corp., subsidiary of National Steel Corp., at Delray, Mich., on Aug. 16 (STEEL, Aug. 29, p. 28), the total number of blast furnaces in the United States was increased to 237. The new stack has a daily capacity of 1000 gross tons, and is the first entirely new unit to be built since 1928.

MONTHLY IRON PRODUCTION

Gross Tons

	1938	1937	1936
Jan.	1,444,862	3,219,741	2,029,304
Feb.	1,306,333	3,020,006	1,838,932
March	1,470,211	3,470,470	2,046,121
April	1,388,008	3,400,636	2,409,474
May	1,260,937	3,545,180	2,659,643
June	1,060,747	3,115,302	2,596,528
July	1,213,327	3,501,359	2,595,791
Aug.	1,495,245	3,616,954	2,711,726
Tot. 8 mo.	10,639,419	26,889,648	18,887,519
Sept.	.....	3,417,960	2,728,257
Oct.	.....	2,891,026	2,991,794
Nov.	.....	2,007,031	2,949,942
Dec.	.....	1,503,474	3,125,192
Total	.....	36,709,139	30,682,704

AVERAGE DAILY PRODUCTION

Gross Tons

	1938	1937	1936	1935
Jan.	46,608	103,863	65,461	47,692
Feb.	46,655	107,857	63,411	57,675
March	47,426	111,951	66,004	57,120
April	46,267	113,354	80,316	55,719
May	40,675	114,360	85,795	55,986
June	35,358	103,843	86,551	51,949
July	39,131	112,947	83,735	49,043
Aug.	48,234	116,676	87,475	56,767
Sept.	.....	113,932	90,942	59,009
Oct.	.....	93,259	96,509	63,818
Nov.	.....	66,901	98,331	68,876
Dec.	.....	48,499	100,813	68,242
Ave.	43,784	100,573	83,832	57,694

AUGUST IRON PRODUCTION

	No. in blast last day of Aug.	July	Total tonnage Merchant	Nonmerchant
Ohio	23	19	64,838	324,580
Penna.	22	21	13,412*	371,092*
Alabama	12	7	49,798	100,106
Illinois	5	5	1,497	107,258
New York	5	6	23,622	70,298
Colorado	1	2		
Indiana	7	6	14,572*	251,087*
Maryland	4	4		
Virginia	1	1		
Kentucky	1	1		
Mass.	0	0		
Tenn.	0	0		
Utah	1	1	1,082	102,003
West Va.	2	1		
Michigan	3	2		
Minnesota	1	1		
Missouri	0	0		
Total	88	77	168,821*	1,326,424*

* Includes ferro and spiegeleisen.

RATE OF OPERATION

(Relation of Production to Capacity)

	1938[1]	1937[2]	1936[3]	1935[4]
Jan.	33.6	76.6	48.2	34.2
Feb.	33.6	79.5	46.4	41.4
March	34.2	82.5	48.5	41.0
April	33.4	83.7	59.1	40.0
May	29.4	84.3	63.1	40.2
June	25.5	76.6	63.6	37.2
July	28.2	82.9	61.5	35.2
Aug.	34.8	85.7	64.3	40.7
Sept.	....	83.7	66.9	42.5
Oct.	....	68.4	71.0	45.8
Nov.	....	49.3	72.3	49.5
Dec.	....	35.6	74.2	49.0

[1] Based on capacity of 50,606,400 gross tons, Dec. 31, 1937; [2] first half on capacity of 49,512,737 tons, Dec. 31, 1936—second half on capacity of 49,727,737 tons, June 30, 1937; [3] capacity of 49,777,893 tons, Dec. 31, 1935; [4] capacity of 50,845,741 tons, Dec. 31, 1934. Capacities by American Iron and Steel institute.

Simplified Joist Sizes

■ A proposed simplified practice recommendation covering sizes of open-web nailer type steel joists has been submitted to all interests for consideration, according to national bureau of standards, Washington.

Proposal recommends six designations of joists in five depths, ranging from 8 to 16 inches, and gives for each designation allowable total load in pounds per linear foot of joist, resisting moment in inch pounds and maximum end reaction in pounds.

Copies of recommendation may be had upon application to the bureau's division of simplified practice.

World Tin Plate Output Off 37 Per Cent

■ World production of tin during first half, 1938, was 82,600 gross tons, compared with 94,600 tons in the first half last year, according to the International Tin Research and Development council. World production in July is estimated at 11,600 tons. The average for the first six months was 13,770 tons.

World apparent consumption in the first half this year was 80,900 tons, 17.6 per cent below 98,200 tons in the corresponding period of 1937. The United States showed the largest decrease, 42.1 per cent. Great Britain's decline was 29.3 per cent. Consumption in Russia increased 32.7 per cent and in Japan 13.6 per cent.

World production of tin plate for first half was 1,416,000 tons, 37 per cent less than the 2,250,000 tons made during first half, 1937. Estimated output in July was 214,000 tons, compared with 378,000 tons in July, 1937.

Canada Making Less Iron, Steel This Year

■ Canadian pig iron production in July totaled 51,238 gross tons, the lowest monthly output this year. This compares with 64,375 tons in June and 79,736 tons in July, 1937. Ferroalloy production was 4129 tons, against 4068 tons in June and 6285 in July last year. Steel ingot and castings output in July was 83,927 tons, in June, 109,401 tons, and in July, 1937, 122,968 tons.

For seven months pig iron production was 455,396 tons, compared with 503,680 tons in the period last year. Steel ingot and castings output for seven months was 754,668 tons, against 836,145 tons for seven months of 1937.

District Steel Rates

Percentage of Ingot Capacity Engaged in Leading Districts

	Week ended Sept. 3	Change	Same week 1937	Same week 1936
Pittsburgh ...	32	— 1	33	70
Chicago	40	+ 2.5	86	72.5
Eastern Pa. ..	33	+ 3	65	48.5
Youngstown .	45	+ 2	73	79
Wheeling	54	None	91	98
Cleveland	41	None	78	82
Buffalo	49	+ 2.5	86	75
Birmingham .	56	+ 3	91	64
New England	50	None	70	80
Cincinnati ..	65	None	89	80
St. Louis	45	+12	77	†
Detroit	67	+ 7	95	100
Average ..	44.5	+ 1	83	71.5

† Not reported.

■ Three large electric power generators, reported as the world's largest, will be built by Westinghouse Electric & Mfg. Co., under a contract awarded last week by Harold Ickes, secretary of interior.

Westinghouse is to construct and install the three generators in the powerhouse at Grand Coulee dam, Washington, for a reported price of $2,611,000.

Capacity of the new generators will be 108,000 kilovolt amperes each, compared with the 82,500 kilovolt amperes capacity of the Boulder dam generators.

PRODUCTION

■ STEELWORKS operations last week advanced in seven districts, remained steady in four, and dropped slightly in one. The national average advanced 1 point to 44.5 per cent. Labor day interruptions this week may cause a slight decline.

Youngstown, O. — Advanced 2 points to 45 per cent. Thirty-nine open hearths, three bessemers and ten blast furnaces now are active. This week is expected to start with a rate of 47 per cent.

Cleveland—Slight changes in open hearth operations balanced, leaving the rate unchanged at 41 per cent. One mill will be down for Labor day, but the leading producer will continue without interruption.

St. Louis—Advanced 12 points to 45 per cent.

Chicago—Up 2.5 points to 40 per cent, the highest figure this year. Labor day will cause some curtailment this week.

Cincinnati—Unchanged at 65 per cent. Some mills are stocking ingots for later rolling.

Buffalo—Increased 2.5 points to 49 per cent as Bethlehem Steel Corp. lighted its fifteenth open hearth.

Birmingham, Ala.—Lighting of its eighth 150-ton open-hearth furnace by Tennessee Coal, Iron & Railroad Co., and dropping of a 90-ton furnace by Republic Steel Corp. resulted in a net advance of 3 points to 56 per cent.

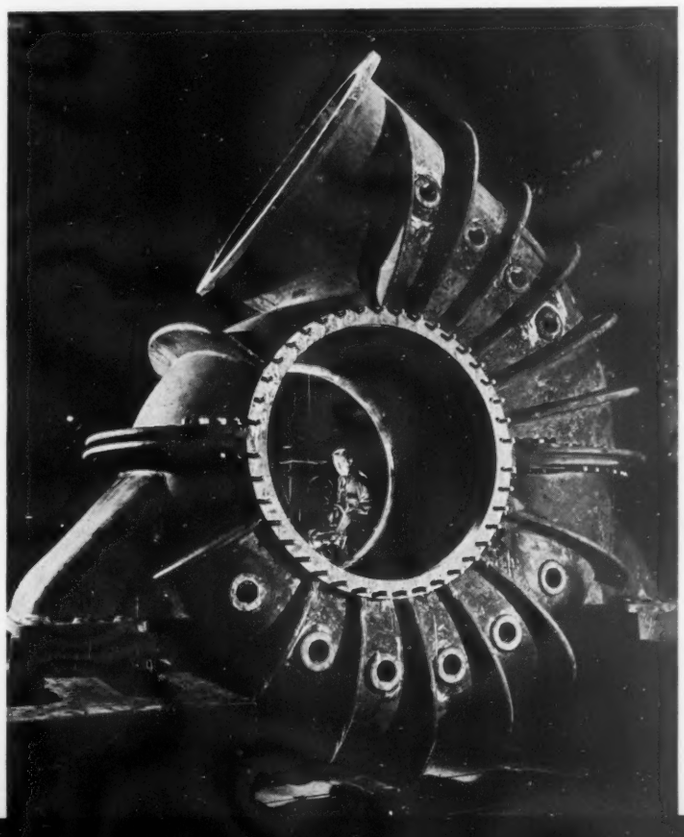
Central eastern seaboard—Gained 3 points to 33 per cent, with indications for a slight recession this week.

Detroit — With 14 of 21 open hearths in operation the rate advanced 7 points to 67 per cent. Ford Motor Co. has shut down one 100-ton furnace and lighted one of 150 tons capacity. Six Ford furnaces have been enlarged, four from 100 to 160 tons, and two from 100 to 175 tons.

New England — Steady at 50 per cent. One more open hearth is to be lighted this week.

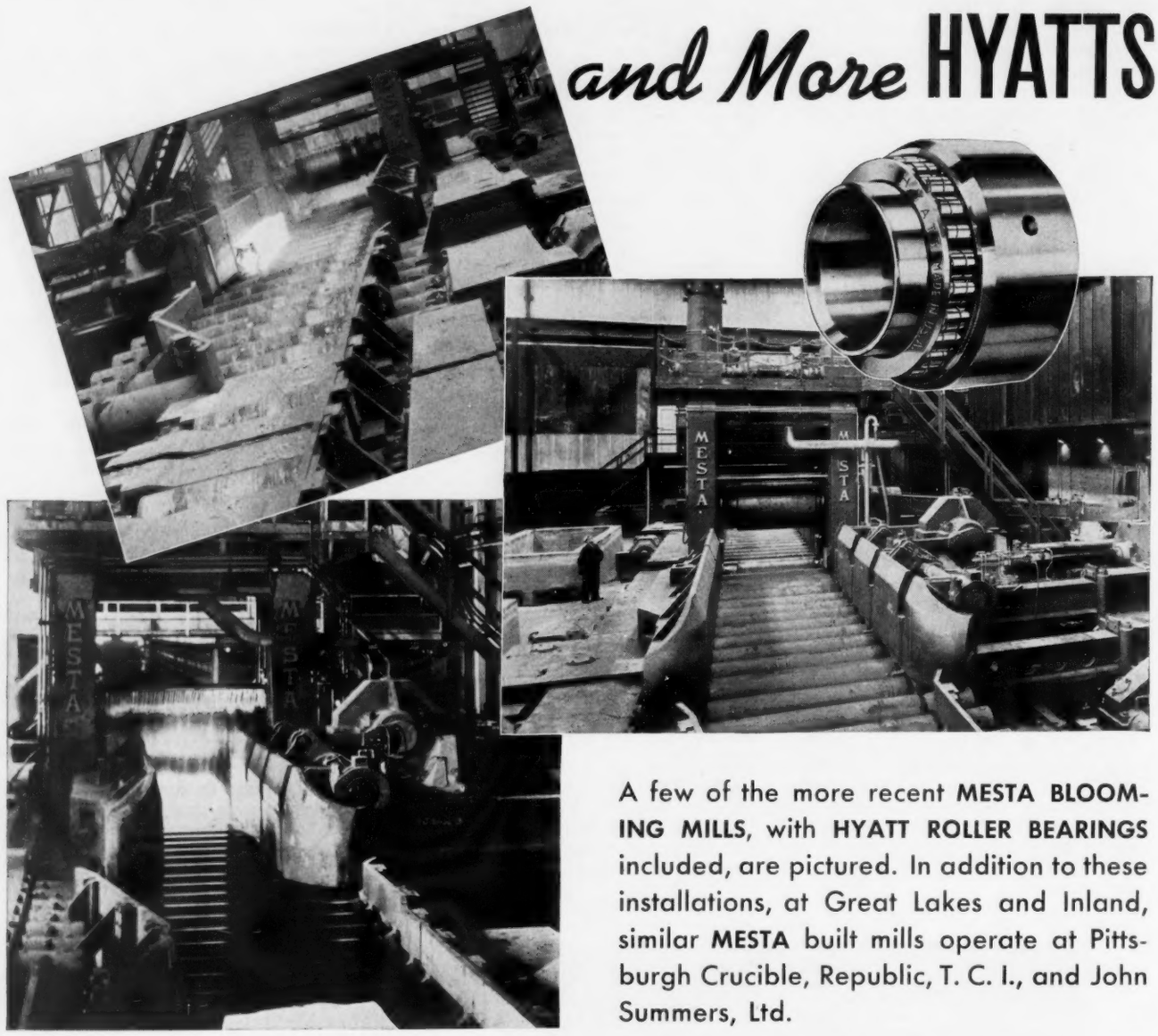
Pittsburgh—Off 1 point to 32 per cent, with a slight loss this week probable because of holiday idleness.

Wheeling, W. Va.—Unchanged at 54 per cent, for the fifth consecutive week.



■ **Drilling stud bolt holes in suction elbow of cast centrifugal pump casing, weighing 45,000 pounds. This is part of one of 72-inch double suction sewage pumps now under construction in Allis-Chalmers Mfg. Co.'s shops, Milwaukee, for Chicago. Each complete motor - driven pumping unit will weigh 135,000 pounds and will be able to pump 375 cubic feet at a speed of 138.4 revolutions per minute against a head of 19½ feet**

More MESTA BLOOMING MILLS *and More* HYATTS



A few of the more recent **MESTA BLOOMING MILLS**, with **HYATT ROLLER BEARINGS** included, are pictured. In addition to these installations, at Great Lakes and Inland, similar **MESTA** built mills operate at Pittsburgh Crucible, Republic, T. C. I., and John Summers, Ltd.

All of which goes to show that whenever and wherever blooming mills are installed, Hyatt Roller Bearings, on the strength of their past records of dependable performance, are invariably included.

May we have the opportunity of working with you and the equipment builder on up-to-date Hyatt installations for your blooming mill tables? Hyatt Bearings Division, General Motors Corporation, Harrison, N. J., and San Francisco. Hyatt Roller Bearing Sales Company, Chicago and Pittsburgh.

HYATT
ROLLER BEARINGS

MIRRORS OF MOTORDOM

DETROIT

■ LABOR DAY this year finds the automotive picture in sharp contrast with last year. Production then was falling alarmingly. A thread of pessimism was running throughout the executive family over the outlook for new models, which were changed only to minor extent from the preceding styles.

Today production is turning upward from the summer low and for the next four months should hold at a good level, if only to replenish dealer stocks, which in some instances are practically exhausted. Added encouragement is derived from the fact a lush market for new automobiles may be waiting to be tapped this fall, and if so, the outlook for car assemblies is good well into the first quarter next year.

While executives feel there are a host of fundamental economic maladies to be cured before any sound prosperity can be assured, they are prepared to make the most of what good business may develop in the next two months. Consensus of estimates for car production in the next year indicates a 15 to 25 per cent improvement. Merchandising programs for new models are being tempered with a fair degree of caution, until it can be determined accurately whether the buying power is there.

Expect 1939 Plymouths Soon

Public announcement of the new Plymouths can be expected shortly. Dealers have assembled here to preview them, applauded the designs and returned to their territories full of enthusiasm over sales possibilities. Shipments have been made to some dealers, and private showings will be started this week in 53 different cities from coast to coast.

The Plymouth plant is gradually moving up assembly schedules, and two assembly lines went into production last week, after one line turned out about 1750 jobs the preceding week.

BY A. H. ALLEN
Detroit Editor, STEEL

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C. P. Simpson, Pontiac sales manager, returning from a swing through the agricultural states of the West, observes that crop reports the country over forecast a yield this year which will far exceed the 10-year average of 1927 to 1936, and this in turn is taken to indicate good business for automobile producers. Abundant rains and sunshine have restored much of the West's former prosperity, and the vast section of the country west of the Mississippi should be a fertile field for car sales in coming months.

■ SINCE the bickering and name-calling between opposing factions of the UAW have been making the front pages of most newspapers regularly, it may be pointless to review the strife, but looking ahead it appears there is little likelihood of a settlement between the Homer Martin camp and the Lewis-supported group of ousted officers. Lewis' proposal of a peace plan was rejected by Martin and in a recent radio speech he bluntly suggested that Lewis keep out of the UAW and spend his time on the CIO contracts with steel companies which Martin inferred left much to be desired.

It is not impossible to conceive of the United Automobile Workers' union severing all connection with the CIO and operating as an independent labor organization. Certainly it is the most powerful and militant division of the group. William Green of the American Federation of Labor may have foreseen something like this when he recently made the gesture of inviting UAW to affiliate with the federation. Such a merger is not considered at all likely around here.

Martin has not been having any too easy a time in holding his ranks. In several instances he has been derided at public appearances and fighting among his audiences has been the regular thing. These disturbances have been started, Martin's followers claim, by "subversive enemies" and other communistic cliques.

UAW Will Demand Checkoff

Shortly the UAW will press for the checkoff in its contracts with General Motors and the coming weeks may see determined efforts to wrest this concession from automobile companies. Martin recently urged workmen in Pontiac to visit the union headquarters after they had returned to their jobs, and sign a card authorizing the company to deduct union dues from paychecks. Martin declared that companies deduct insurance payments from wage checks, and "have shown us the way to obtain the checkoff."

The checkoff, however, is considered by most companies as the "last straw" and they would have to be hard pressed to accede to this demand.

■ IN REFERRING last week to Hupp's purchase of tools, dies, jigs and fixtures from Cord Corp., a figure of $1,000,000 was mentioned. This sum represents new financing now being arranged for Hupp, and the amount involved in the purchase from Cord is reported as approximating only $50,000.

The Hupp stamping plant here has been disposed of and the press equipment will be placed on the market by an outside interest which has taken over the sale. It is said

that a shortage of used press equipment exists, and it should not be difficult to move the Hupp equipment. Bodies for the new Hupp lines probably will be made by the Hayes Body Co.

The new Lincoln Zephyrs will offer an innovation in body style next year, according to local gossip. Doors and body panels will flare out at the lower edge with no running board apparent when doors are closed. When they are opened, however, beneath the door skirt will be revealed a narrow running board panel.

Adaptation of assembly lines and passenger car production methods to truck manufacture has been a trend in recent years. Formerly, trucks were largely handmade vehicles, with extra strength being built into most parts and double precautions taken to give the maximum of durability. As a consequence, truck costs were comparatively high. It is possible to accomplish considerable saving by placing truck manufacture on an assembly line and by using some parts interchangeably with passenger cars.

A leading truck builder, viewing the advantages of the "line" method has been on the verge of changing over some of its plants for this type of manufacture. But at latest reports, decision had been revised to make the new setup only a semi-line arrangement. Field reports had disclosed that heavy-duty work demanded high-grade materials and painstaking workmanship, not so readily obtainable by the mass production method.

■ STEEL buying has of course been featured by Buick's announcement that some 35,000 tons of steel had been placed for requirements over the next 90 days. This tonnage covers all steel bought thus far for 1939 model production, the latest buying including 13,000 tons. The balance was placed in July and early August.

According to local steel interests, there have been no single buys thus far for automotive accounts as large as the Buick tonnage, but Chrysler or Briggs must have placed a fair tonnage to fulfill needs on Plymouth production which is now practically in full swing.

Construction is being started immediately on a new 301 x 748-foot service building at the Buick plant, replacing two outmoded structures which will be razed. Of modern type steel, concrete and brick construction, the two-story building will provide service parts manufacturing, storage and shipping facilities, a total of over 350,000 square feet of floor space. In addition to the building, the program will involve new railroad tracks, shipping docks, and a bridge over railroad tracks for interplant traffic.

This year, Buick is changing its customary procedure and instead of showing its new models first to representatives of the press, will unveil them Sept. 9 to the captain of the University of Michigan football team, the most popular student of William and Mary college, Notre Dame university's senior class president, Northwestern university's May queen, the junior class president and junior prom queen of the University of Illinois and a few other campus luminaries. Apparently next year Buick plans to make a concerted "play" for university student favor. Press preview is scheduled for Sept. 22.

■ IN ABOUT 30 days it is expected preliminary details of 1940 model programs will have been outlined by two leading car builders. Work will be laid out over a six to eight-month period, and it is understood machine tool builders will not be called in until it is definitely known just what requirements will be in the way of equipment. This earlier planning marks a rather complete change from the policy of former years.

Motor changes are important in this advance planning, with considerable research being devoted to alloy cast iron and steel for blocks, valves, tappets, etc. A cylinder block presents a rather unusual problem in that foundry efforts must be directed toward obtaining hard surfaces on cylinder bores and at the same time keeping pan-rails and manifold faces soft enough to machine satisfactorily. One answer may be to make the entire block soft enough to machine, and then use hard liners in the cylinder bores.

Solving Cylinder Block Problem

Another solution, developed only recently, involves addition of a specially compounded material to the molten iron which by virtue of its effect on the cooling rate and hardening yields a casting which shows about the proper balance between bore hardness and surface hardness. This material can be supplied at a cost of about $1 per ton, and preliminary tests are showing some good results.

Some engineers are of the opinion, however, that the ultimate solution will be to use liners or sleeves in cylinder bores, in view of the fact they are easily replaced should difficulty develop in any one cylinder. Chief stumbling block in the use of liners at present is the differential in expansion characteristics between the liner and the cylinder block.

Final machining and assembly of hermetically sealed refrigeration units are being carried out in air conditioned rooms at the Norge Kercheval avenue plant here which has been completely equipped with new machinery. This sealed refrigeration unit, it is understood, will be offered in a lower-priced standard line of refrigerator boxes, and will not supplant the present open-type unit.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1936	1937	1938
Jan.	377,244	399,186	227,744
Feb.	300,810	383,900	202,872
March	438,943	519,022	238,753
April	527,625	553,231	238,133
May	480,518	540,377	210,183
June	469,368	521,153	189,399
July	451,206	456,909	150,444
7 mos.	3,045,714	3,373,778	1,456,476
Aug.	275,934	405,072	*85,000
Sept.	139,820	175,630	.....
Oct.	230,049	337,979	.....
Nov.	405,799	376,629	.....
Dec.	518,958	346,886	.....
Year	4,616,274	5,015,974	.....

*Estimated.

Estimated by *Ward's Reports.*

Week ended	
Aug 6	14,771
Aug. 13	13,790
Aug. 20	23,940
Aug. 27	18,700
Sept. 3	22,165

	Week ended Sept. 3	Aug. 27
General Motors	1,500	500
Chrysler	4,600	1,950
Ford	13,250	14,000
All others	2,815	2,250

Steel Truckers Organize

■ Iron, Steel and Heavy Transporters' association has been formed by motor carriers specializing in heavy commodities, under a Michigan charter. It includes truck operators in Michigan, Ohio, Illinois, Indiana, Kentucky, Pennsylvania, New York and West Virginia. William R. Hefferan, formerly assistant traffic manager for Great Lakes Steel Corp., is manager, with offices at 1419 Majestic building, Detroit. An iron and steel tariff will be published.

■ Gisholt Machine Co., Madison, Wis., maker of turret lathes and other machine tools, held open house Aug. 27 for members of employes' families. Several departments were in operation, the visitors being given a tour of inspection. A picnic lunch was served.

THE "Extra-Service" Lead

Extra service in extra-difficult situations — that's the net of the Tellurium Lead story. This lead welcomes tough assignments — thrives on hard knocks.

Many of Tellurium Lead's best service records have been made in plants handling acids under conditions of extreme severity. Users report increased resistance to sulphuric and other corrosive acids, even at temperatures that tend to approach the melting point of the metal. In plant after plant, it has prolonged the life of equipment . . . and reduced the number of shutdowns for repairs.

Another highly important property of Tellurium Lead is this: *It toughens under stress.* When rolled, stretched or hammered, it actually becomes stronger. As a result, turn-over points and joints are less subject to cracking. Furthermore, where vibration occurs, this capacity to develop latent strength minimizes buckling and creeping. This same quality also gives Tellurium Lead improved resistance to fracture due to repeated heat changes.

Tellurium Lead of our manufacture is time-tested St. Joe chemical lead alloyed with a small quantity of tellurium. It gives the advantages of this well-known chemical lead plus important new ones. Yet now, due to a price reduction, it costs only a fraction of a cent more per pound than chemical lead. Available in sheets, pipe and coils. For further facts, write our nearest branch.

Typical User Reports

"1¼" x 6 lbs. Tellurium Lead coil is used in a bath of 10 to 20% sulphuric acid and water with a steam pressure of 5 to 15 lbs. and a temperature of 170° F. Tellurium Lead has not shown any signs of oxidization after four or five times the length of service of lead formerly used."

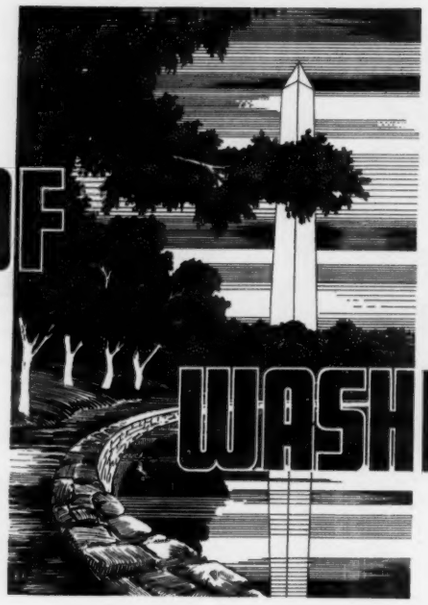
"We have been using Tellurium Lead in steam injector pipes for acid service," another user reports. "We find that the material has a distinct advantage over lead formerly used. It gives the added rigidity and resistance to deformation needed under the conditions present."

NATIONAL LEAD COMPANY

New York, Baltimore, Buffalo, Chicago, Cleveland, Cincinnati, St. Louis; National-Boston Lead Co., Boston; John T. Lewis & Bros. Co., Philadelphia; National Lead & Oil Co., Pittsburgh; Georgia Lead Works, Atlanta; Gibson & Price Co., Cleveland; American Lead Corp., Indianapolis; Master Metals, Inc., Cleveland; The Canada Metal Co., Ltd., Toronto, Montreal, Winnipeg, Vancouver.

Tellurium Lead

WINDOWS OF WASHINGTON



BY L. M. LAMM

Washington Editor, STEEL

WASHINGTON

■ ATTEMPTS to arbitrate the railway wage dispute collapsed last week and the railway labor unions prepared to call a strike vote in protest to the carriers' decision to reduce wages 15 per cent. About three weeks will be required to complete the vote.

Meanwhile class 1 railroads reported to the bureau of railway economics of the Association of American Railroads a net operating income of $109,335,282 for the first seven months this year. This compares with net railway operating income of $360,451,578, or 2.79 per cent on property investment, for the first seven months of 1937. In the first seven months of 1930, the net railway operating income was $450,935,427, or 3.48 per cent on property investment.

Property investment is the value of road and equipment including materials, supplies and cash. Net railway operating income is what is left after the payment of operating expenses, taxes and equipment rentals, but before interest and other fixed charges. Compilation of earnings for the first seven months of last year is based on reports from 137 class 1 railroads representing a total of 234,638 miles.

NAVY WANTS MORE MONEY FOR SHIPBUILDING PROGRAM

Discussing naval appropriations with the President last week, Admiral William D. Leahy told Mr. Roosevelt an appropriation of $200,000,000 more than for this year will be needed by the navy to carry out its shipbuilding program.

The additional appropriation will be needed, he stated, to start work on more than a score of ships during the fiscal year beginning July 1, 1939. In accordance with congressional authorization the navy wants additional funds to start construction of two more battleships, four cruisers, eight destroyers and eight submarines.

LAWYERS SEEK INQUIRY IN ELECTRICAL EQUIPMENT

Last week the committee on public utilities of the National Lawyers' guild urged the economic committee to determine whether a monopoly exists, or unfair trade practices are being carried on, in the manufacture and sale of heavy electrical equipment used primarily by electric utility companies.

The lawyers indicated that three manufacturers have in the past maintained artifically high prices for the sale of turbine generators, rotary converters, large size cable and other equipment used by utility companies. It is quite possible, they said, that an inquiry will disclose that "artificial" prices were maintained, among other reasons, "for the purpose of enabling electric utilities to sustain high values based on reproduction cost appraisals and thus defeat reductions in rates during the 1931-1934 depression."

It is pointed out in their statement that evidence of unfair trade practices with reference to prices was indicated by a recent decision by the Pennsylvania public utility commission which denounced the practice of manufacturers making identical bids.

The commission declared in the case of one company "the identical quotations received by the applicant company gives rise to the inference or presumption that there exists between the companies submitting bids an illegal combination in restraint of trade, controlling the prices, and in effect destroying the competition that should exist in the prices for the equipment on which bids were requested.

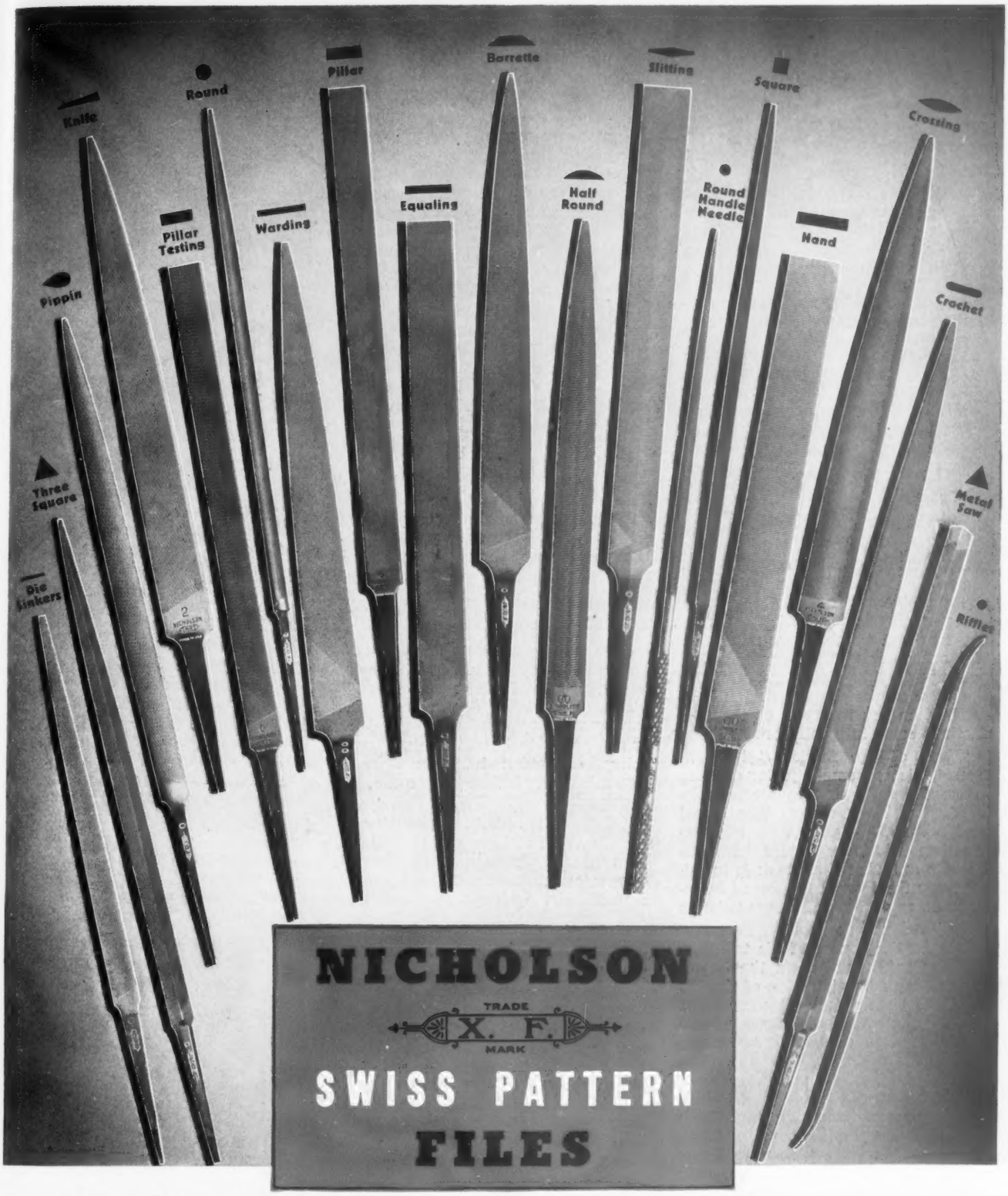
"Such an unlawful restraint imposed by corporations combining together for the purpose of preventing competition and enhancing the prices of necessary equipment for utilities merits rebuke and condemnation. A thorough investigation by the proper federal regulatory bodies should be instituted to correct this abuse."

Under the direction of Herman Oliphant, chief counsel for the treasury department, and a member of the economic committee, antitrust laws are being studied. A staff of experts also has been gathered to analyze all information available under government purchasing contracts. Steel will be included in this survey. This can readily be done by the treasury department because the procurement division is a part of the treasury department. The division is charged with the purchase of large quantities of various materials for government departments.

HOW SHADOW OF FEDERAL SPENDING IS LENGTHENING

Federal expenditures, except debt retirements, for 1929, equaled less than two-thirds of the total accountable income of the inhabitants of California. In 1937 like federal expenditures were about equal to total accountable income in California, Washington, Idaho, Nevada, Utah, Arizona, Montana, Wyoming, Colorado, New Mexico and the Dakotas, according to the First National bank of Boston. Figures on accountable income are from the National Industrial Conference board.

United States treasury figures



ILLUSTRATING A FEW FROM OUR COMPLETE LINE

For tool and die making . . . for all similar work where superior workmanship and extra fine files are needed . . . Nicholson X.F. Swiss Pattern Files are made in a wide variety of shapes and sizes and up to seven numbers of cut.

These precision files are produced in a large department of the Nicholson File Company especially equipped for the purpose.

X.F. Swiss Pattern Files are made from selected file steel, with all the care that is typical of Nicholson production methods. You can always depend on their uniformly high quality and their ability to do your precision filing with the maximum efficiency.

Warding, Equaling and Joint Files, supplied in regular thicknesses, may also be obtained in minimum quantities of 1 dozen, without extra charge, in many B. & S. Gauges. Nicholson File Company, Providence, R. I., U. S. A.

A FILE FOR EVERY PURPOSE

give federal expenditures for 1929 as $3,331,000,000, and in 1937 at $8,281,000,000. For the current fiscal year federal spending is estimated at $9,000,000,000. This would equal accountable income of the states enumerated, and also all that of Nebraska and one-seventh that of Kansas.

If all state and local government costs are included, total expenditures would approximate total accountable income of all people living west of the Mississippi river.

MADDEN ANSWERS CRITICISM OF LABOR RELATIONS BOARD

J. Warren Madden, chairman, national labor relations board, took up the cudgels again for his organization last week to answer some of the criticism which has been aimed at it. He seems to be giving more attention to answering criticisms these days than to any other work. Plenty of darts are being fired at the board from many quarters.

In a talk last week Madden took up the issue between the CIO and the A. F. of L. "Some of our most acute problems," he said, "continue to spring from the division in the main current of the labor movement. The acrimony and bitterness which accompany this civil conflict make the task of the umpire difficult indeed when the interests of the two factions come into collision.

"Each of the factions," he continued, "is extremely jealous of its interests and quick to suspect favoritism for the other. The board and its staff realize that any favoritism whatever would be inexcusable and that their task is to administer the law as the board interprets it, regardless of whom it helps or hurts."

During the course of his talk Mr. Madden said that "from the beginning of the administration of the act we have been assailed by the most bitter criticism imaginable. We have never been in danger of becoming self assured in our administration. There have been so many and such articulate people, who have known so much more than we have been able to learn about our task. They know, without pretending to know anything at all about any particular case, so much about all of our cases put together that they generalize about them without restraint."

UNEMPLOYMENT BENEFIT PAYMENTS FALL IN JULY

Payment of more than $36,000,000 in unemployment benefits during July to jobless workers in 28 states brought total distribution since Jan. 1 to approximately $216,000,000, according to the social security board.

Amount of benefits paid during July decreased 8 per cent from June, the first significant decrease since payments began, and was accompanied by a drop of 21 per cent in the number of initial claims for benefits filed in states which paid benefits in June.

Re-employment of workers who have been receiving benefits and fewer layoffs were significant factors underlying these decreases, according to special reports to the social security board. However, exhaustion of wage credits of workers who have been receiving benefits must also be considered.

States in which benefit payments decreased 10 per cent or more in July were Alabama, District of Columbia, Maine, Maryland, Minnesota, New York, Oregon, Pennsylvania, Rhode Island, Tennessee, and West Virginia. Decreases of approximately $1,400,000 and $1,000,000 were reported by New York and Pennsylvania, respectively, while a considerable number of states showed drops in payments ranging from $200,000 to $500,000. The bulk of the decreases occurred in payments for total unemployment.

ANDREWS PROCEEDS SLOWLY IN NEW WAGE-HOUR JOB

Few policy questions have been worked out by Elmer F. Andrews, administrator of the hours-wages division of the labor department. To newsman last week he explained he is not going to be rushed into anything. He said he had been warned against that before he came to Washington.

Of general interest to industry is whether or not hearings to be held by the administrator or by the industry committees will be open or closed. Mr. Andrews said this has not been decided but that he certainly would not rent any convention halls to hear talks from a lot of "crack pots."

Mr. Andrews last week discussed matters with the textile industry in what he called an "informational meeting." All who had specific interest in the discussion were invited to participate.

There has been some whispering about Washington that Mr. Andrews would have a good chance to get the A. F. of L. and the CIO together. Answering a question, he said this would come under the head of conciliation and opined he would have all he could do in taking up hours and wages.

Eventually Mr. Andrews intends to set up regional offices, but how many of these and when they will be organized will not be decided until he perfects a national organization. An early question to be tackled, he said, is that of interstate and intrastate commerce. He pointed out that questions of that kind cannot even be approached until he has established a law division.

It is expected the new bureau will employ in the neighborhood of 1000 persons, most of whom will be under civil service.

Answering questions of the newsmen, Mr. Andrews said he would listen to industry trade associations for suggestions for industry committees but he does not intend to be bound by any suggestions thus obtained.

Mr. Andrews expressed the opinion that the industry committees will hold open hearings when they are trying to get information on wages. It will be up to the administrator in each industry, however, to determine exemptions. By this he meant such positions as apprentices, etc. Industry committees will have authority to set up subcommittees if that seems necessary.

COMMERCIAL MISSION TO SOUTH AMERICA STUDIED

Business interests are keen about a commercial mission to South America. The government has been toying with the idea for a long time.

Department of commerce officials believe the right time has come for such a mission and within the next couple of months it is expected some program will be worked out. The matter will be on the agenda of the Roper business advisory council which will have its first fall meeting here early in October. It is not yet known whether the mission will be an official government mission of business men or whether it will be sponsored by the business advisory council.

Many government officials feel such a mission would help offset the propaganda going into Latin American countries from Europe.

COAL COMMISSION SETS DENVER HEARING FOR SEPT. 14

National bituminous coal commission last week announced a hearing Sept. 14 in Denver to take up the proposals of minimum prices and marketing rules and regulations. The hearing will consider only districts 16 to 23 and will be before members of the commission.

This hearing for the western districts follows one which was held by the commission in Denver in June, and is the second major step in the commission's procedure for setting minimum prices.

The commission will receive evidence relating to the kinds, qualities and sizes of coal produced in each of the districts, and evidence relating to the classification of such coal, price variations as to mines, consuming market areas, values as to uses and seasonal demand, and evidence as to whether or not such proposed minimum prices conform to the provisions of the act.

MEETINGS

A. S. M. LINES UP PROGRAM FOR CONGRESS SESSIONS

■ SOME 40 technical papers are scheduled for sessions of the American Society for Metals in connection with the twentieth annual National Metal congress in Detroit, Oct. 17-21. One of the features of the program will be a three-session symposium on hardenability of medium and low-alloy steels.

Two educational lecture courses are arranged. The first, to be conducted on five afternoons, will deal with machinability of steels and nonferrous metals; the second, on the first three evenings of the week, concerns pyrometry.

Following the annual business meeting of the society on the morning of Oct. 19, A. L. Boegehold, head of metallurgy department, research laboratories division, General Motors Corp., Detroit, will present the Campbell Memorial lecture.

Statler hotel will be headquarters for the American Society for Metals. The Metal exposition conducted concurrently with the congress will be held in Convention hall. With 230 exhibitors, the show will be larger than last year's in Atlantic City.

TOOL ENGINEERS SCHEDULE TWO NATIONAL MEETINGS

American Society of Tool Engineers is planning two national meetings in its 1938-39 program, one in Pittsburgh, Oct. 14-15, and the other in Detroit during the week of March 12 in connection wth the second Machine and Tool Progress exposition. At both, economic aspects of developments in new equipment and processes will be stressed.

The Pittsburgh convention will include technical sessions, visits to steel plants, a dinner and a directors' meeting.

The annual meeting next spring will follow the plan of the first meeting and exposition last March. Frank A. Shuler, master mechanic, Highland plant, Chrysler Corp., Detroit, is general chairman; and Homer C. Bayliss, Motch & Merryweather Machinery Co., Detroit, is program committee chairman. Floor space in the exposition will approximately double that of 1938, according to Ford R. Lamb, executive secretary, 2567 West Grand boulevard, Detroit.

FIND FOREMEN INFLUENCE PURCHASES OF EQUIPMENT

That the foreman has considerable influence in the purchase of shop equipment is revealed in a survey just completed by the National Association of Foremen in preparing for its Foremen's exposition in Akron, O., Oct. 14-16. To learn to what extent the shop executive is consulted as to purchases, the association sent a questionnaire to its membership which includes plant superintendents, works managers, engineers, department heads and purchasing agents, as well as foremen.

According to association officials, the survey showed that once the decision has been reached to purchase a given type of equipment, the opinion of the shop executive is most often decisive in specifying the competitive brand or make. Included in the survey were 13 groups of industrial equipment, and in two groups 92 per cent of those replying to the questionnaire indicated they are requested to pass judgment on contemplated purchases. Other groups ranged from this figure down to 50 per cent.

STEEL INSTITUTE OFFERS PRIZES FOR BEST PAPERS

British Iron and Steel institute has announced two prize competitions for technical papers and a research grant. Capt. C. A. Ablett has made available to the institute a prize of £50 for the best paper on steelworks engineering written by a junior engineer employed in a British iron and steel works. Competition closes Jan. 31 and the successful paper will be presented at the annual meeting in May.

The Williams prize of £100 is presented annually to the author of the best paper of a practical character. Author must be a British subject regularly employed in a British iron or steel works in a position not superior to that of manager of any one technical department.

Until Sept. 30, the institute will receive applications for a limited number of Andrew Carnegie scholarships, usually to the value of £50 or £100. Purpose of the grants is to assist those engaged in research. Candidates must be under 35 years old.

ELECTROCHEMISTS TO HOLD CONVENTION IN ROCHESTER

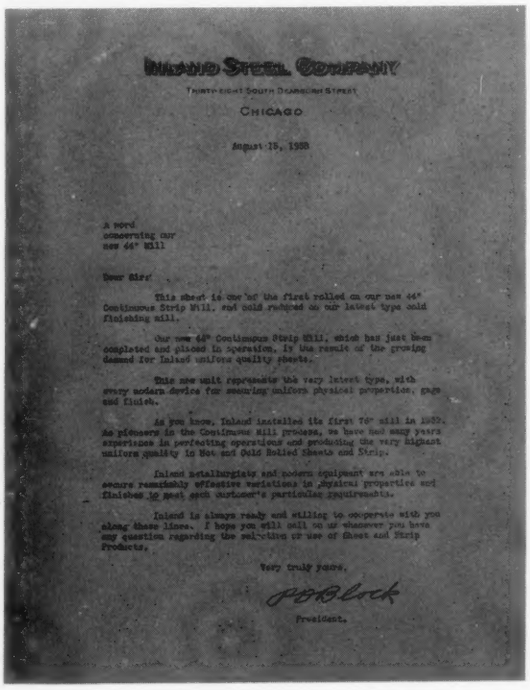
Electrochemical society will conduct its fall meeting at Hotel Seneca, Rochester, N. Y., Oct. 12-15. The program will feature a symposium on "Plastics in the Electrochemical Industry" and another on "The Metallurgy of Silver." Dr. Colin G. Fink, Columbia university, New York, is secretary of the society.

FARM EQUIPMENT MAKERS WILL MEET IN OCTOBER

Farm Equipment institute will conduct its forty-fifth annual convention at French Lick, Ind., Oct. 17-19. Because of conditions at home and abroad, the meeting is expected to be of more than usual importance. Business sessions will be held mornings only. Robert A. Jones, 608 South Dearborn street, Chicago, is secretary.

STEEL CONSTRUCTORS TO CONVENE OCT. 11-14

American Institute of Steel Construction will conduct its sixteenth annual convention at French Lick Springs hotel, French Lick, Ind., Oct. 11-14. V. G. Iden, 200 Madison avenue, New York, is secretary.



INLAND STEEL COMPANY
THIRTY-EIGHT SOUTH DEARBORN STREET
CHICAGO

August 15, 1938

A word concerning our new 44" Mill

Dear Sir:

This sheet is one of the first rolled on our new 44" Continuous Strip Mill, and cold reduced on our latest type cold finishing mill.

Our new 44" Continuous Strip Mill, which has just been completed and placed in operation, is the result of the growing demand for Inland uniform quality sheets.

This new unit represents the very latest type, with every modern device for securing uniform physical properties, gage and finish.

As you know, Inland installed its first 76" mill in 1929. As pioneers in the Continuous Mill process, we have had many years experience in perfecting operations and producing the very highest uniform quality in Hot and Cold Rolled Sheets and Strip.

Inland metallurgists and modern equipment are able to secure remarkably effective variations in physical properties and finishes to meet each customer's particular requirements.

Inland is always ready and willing to cooperate with you along these lines. I hope you will call on us whenever you have any question regarding the selection or use of Sheet and Strip Products.

Very truly yours,

P. B. Block

President.

◆

Business Letter Inscribed on Steel

■ **A sales letter distributed recently by Inland Steel Co., Chicago, is unlikely to be torn or to grow yellow with age. Announcing the opening of a new 44-inch strip mill** **(see p. 36)** **and the availability of flat-rolled products from that unit, the letter was inscribed on a sheet of strip rolled by the new mill and cold reduced on a cold-finishing mill. Size of the sheet and the letter-head correspond to the company's usual paper stationery**

MEN OF INDUSTRY

■ R. J. McCABE, associated with Western Electric Co. and Graybar Electric Co., 30 years, has been named manager of electrical materials sales, Indiana Steel & Wire Co., Muncie, Ind.

James L. Galbraith, who, as noted In STEEL, Aug. 22, page 20, has served as assistant sales manager the past 12 years, is now manager of sales for manufacturers' wire and merchant trade products.

P. G. Gullett, assistant sales manager, who has been associated with the Indiana company more than 35 years, has been appointed office manager of sales.

♦

F. C. Young, manager of sales, Union Drawn Steel division of Republic Steel Corp., Massillon, O., has announced the appointment of L. I. Barker, formerly manager of sales of the Cleveland district office, to the position of assistant manager of sales with headquarters at Massillon. Mr. Barker will take over the duties of R. B. Barnett, who is leaving the corporation to assume the management of the Buffalo office of Peter A. Frasse & Co. Inc., steel warehouse organization.

A. G. C. Quay, salesman in the Cleveland office, will succeed Mr. Barker as Cleveland district sales manager. Mr. Barker, formerly with Carnegie Steel Co., began his association with Union Drawn, then an independent cold finisher, in 1923 as salesman in the Cleveland district sales office and became manager of that office in 1929. Mr. Quay joined the Union Drawn Cleveland office organization in 1927.

♦

J. R. Fenstermaker has been elected president, Hugh J. Baker Co., Indianapolis. He succeeds the late Hugh J. Baker.

♦

George H. Houston has resigned as president, Baldwin Locomotive Works, Philadelphia, effective Sept. 30, after ten years of service.

♦

James M. Daniel, formerly sales manager, Stearns Coal Sales Co., Stearns, Ky., is now directing sales of the Blue Diamond Coal Sales Co., Cincinnati, an affiliate of Appalachian Coals Inc.

♦

E. R. Crosby, the past ten years associated with the Allyne Ryan Foundry Co., has become identified with the Smith Facing & Supply Co., Cleveland, as assistant to the vice president and general manager.

♦

R. W. Krass has been appointed central station manager, eastern district, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Mr. Krass, since 1919 identified with the central station and marine sales departments in the New York office, will continue his duties as manager of the marine division. He is a member, American Institute of Electrical Engineers.

R. J. McCabe

J. L. Galbraith

P. G. Gullett

♦

J. R. Funk, service engineer in Oklahoma and Texas for the Landis Machine Co., Waynesboro, Pa., left Miami, Fla., Sept. 3, via Pan American Airways for a trip through South America where he will service Landis die heads and thread cutting machines in the oil fields, as well as in the industrial shops. His work in Oklahoma and Texas has been taken over by William B. Baker.

♦

J. F. O'Donnell has been appointed assistant sales manager, merchandising division, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. Associated with Westinghouse since 1920, Mr. O'Donnell has been central district merchandising manager the past four years. He will be located at the merchandising division headquarters in Mansfield, O.

J. E. Hugo, formerly sales promotion manager, central district, will succeed Mr. O'Donnell as merchandising manager of that district. He has been with Westinghouse 17 years.

R. C. Cosgrove and T. J. Newcomb have been appointed managers of the household refrigeration and commercial refrigeration departments, respectively, with headquarters in Mansfield.

♦

E. G. Mansfield, formerly vice president and treasurer, Samuel C. Rogers & Co., manufacturer of automatic knife and saw grinding machinery, Buffalo, has been elected president, succeeding the late Oliver Cabana Jr. Mr. Mansfield has been associated with the business 25 years. Other officers are: Oliver F. Cabana, vice president, and Arthur F. Moul, re-elected secretary.

♦

Strickland Kneass Jr. has been named manager, combustion control department, Morgan Construction Co., Worcester, Mass. He will have charge of the sale and development of the Isley furnace control system. Mr. Kneass recently was associated with Gulf Oil Corp., Pittsburgh, and previously had combustion and furnace engineering experience as manager, Costello Engineering Co., and as steam engineer, Youngstown Sheet & Tube Co.

♦

A. L. Campbell has been placed in charge of offices recently opened at 519 Transportation building, Washington, by Timken Roller Bearing Co., Canton, O., to provide engineering facilities to various governmental departments. Mr. Campbell

joined Timken's engineering staff in 1929. Later he followed sales engineering work in Philadelphia and Washington. In 1936 he returned to the home office to assist in organizing and developing sales and engineering of the fuel injection equipment division.

♦

J. B. Linabury has joined the Saginaw Malleable Iron division of General Motors Corp., Saginaw, Mich., in charge of development work. He became associated with General Motors in 1909, later leaving to engage in manufacturing and engineering work until 1920 when he rejoined the corporation. In the next ten years he modernized the Saginaw Malleable Iron division foundry, after which he started the Harrison Radiator division foundry in Lockport, N. Y. In the late twenties he designed the new Buick and Pontiac foundries. In 1930 he took a leave of absence and went to England, and upon his return was put in charge of centrifugal casting work for the Campbell, Wyant & Cannon foundry at Muskegon, Mich. Returning to General Motors in 1935, he designed and built gray iron and malleable iron foundries for the McKinnon Industries of Canada. He leaves this work to become associated with the Saginaw division.

DIED:

■ C. PARKER HOLT, 58, vice president and a director, Caterpillar Tractor Co., Peoria, Ill., Aug. 24, at his home in Piedmont, Calif. For nearly 40 years he was associated with Caterpillar Tractor and with one of its predecessors, the Holt Mfg. Co., founded by his father.

♦

C. L. Pfeifer, 57, recently treasurer, Chain Belt Co., Milwaukee, in Philadelphia, recently.

♦

Claude A. Huck, secretary and treasurer, Chicago Extruded Metals Co., Chicago, in that city, Aug. 27.

♦

Floyd J. Anderson, 42, formerly in charge of production, Bower Roller Bearing Co., Detroit, for more than 20 years, at Grand Rapids, Mich., Aug. 24.

♦

Michael F. O'Connor, 70, chairman, Phoenix Mfg. Co., with offices in Joliet, Ill., and Chicago, Aug. 27. He had been with the Phoenix company 40 years.

♦

Patrick Milroy, 72, formerly superintendent, engineering department, Chicago Hardware Foundry Co., North Chicago, Ill., in that city, Aug. 24.

♦

George H. Wood, 63, outstanding authority on air brakes and chairman of the air brakes committee of the Association of American Railroads, at Bakersfield, Calif., Aug. 27.

♦

Emanuel Tobiessen, 59, electrical engineer, Allis-Chalmers Mfg. Co., Milwaukee, for 30 years, Aug. 22, at his birthplace in Mandal, Norway, while on a three months leave of absence.

♦

Walter V. Helmel, 51, first vice president and a director, Motor Products Corp., Detroit, in Detroit, Aug. 30. He joined the Motor Products Corp. in 1916, after having been purchasing agent for the Vanguard Co.

♦

Samuel T. Stephens, 86, pioneer mining engineer and industrialist of Birmingham, Ala., Aug. 20 at his home in Alhambra, Calif. Born in Cornwall, England, he came to this country with his brother and is credited with building the first beehive coke ovens in the South.

♦

James W. Harty, 70, former sales representative, American Locomotive Co., Cleveland, at his home in Shaker Heights, O., Aug. 29. He went to Cleveland seven years ago as sales manager of that district, and retired two and a half months ago after more than 40 years' service.

♦

James E. Palmer, for 31 years an employe of the Inland Steel Co., Chicago, in that city, Aug. 26. He began work as an auditor at Inland's Indiana Harbor plant in 1907, and in December of that year became assistant works auditor. He was promoted to works auditor in 1918.

Steel To Span Zambesi River in African Jungle

■ Construction of a suspension bridge 1000 feet long over the Zambesi river, Rhodesia, South Africa, is under way. Steel is being fabricated by Dorman Long & Co. Ltd., Middlesbrough, Eng. After reaching the coast of Africa the steel is transported through 200 miles of jungle and erected. Tunnels are being driven into rock on each side of the river to afford cable anchorage. Towers supporting the cables are to be 128 feet high and cables will be 1600 feet long.

The new bridge will connect the northern and southern portions of Rhodesia, to which the Zambesi river is the boundary.

Activities of Steel Users, Makers

■ Carboloy Co., Detroit, will resume its schools of instruction in the use of Carboloy tools this fall and winter. Purpose is to acquaint shopmen with practical phases of cemented carbide. The course consists of a four to six-hour session in which more than 70 important points are reviewed. Classes meet in Carboloy offices in various cities or in plants where the instruction is desired. The school is available also for meetings of engineering societies, foremen's clubs and similar groups. Applications may be made to the company's main office at Detroit or to any local representative.

♦

Republic Steel Corp., Cleveland, has appointed Todd-Donigan Iron Co., Louisville, Ky., as a distributor of Toncan iron sheets.

♦

Federated Metals division, American Smelting & Refining Co., Chicago, has moved its offices and plant to 123rd street and Indianapolis boulevard, Whiting, Ind.

♦

Dravo Corp., Pittsburgh, has begun operations on an order for three semi-welded hopper type barges placed by the Marquette Cement Mfg. Co., Chicago. Hull dimensions are 195 x 35 x 11 feet.

♦

Ingersoll-Rand Co., New York, has been awarded contracts for the condensers, condenser pumps and boiler feed pumps for a third 18,500-ton tanker to be built for the Atlantic Refining Co. at the Sun shipyards, Chester, Pa.

♦

Allis-Chalmers Mfg. Co., Milwaukee, has moved its Dallas, Tex., district office, E. W. Burbank, manager, to new quarters at 1800 North Market street, where the power, electrical and industrial divisions now occupy an entire building.

♦

Olentangy village, now nearing completion as a suburb of Columbus, O., will feature monel kitchens in all of its 403 apartments, according to J. J. Whitehead, president, Whitehead Metal Products Co., New York. The project is financed by the federal housing administration.

♦

McNally-Pittsburg Mfg. Corp., Pittsburg, Kans., maker of coal preparation equipment, has received an order from the Consorcio Administrador de Emprezas de Mineracao for a large coal washing plant to be built in Brazil. This order will require about 20 carloads of machinery to be built in and shipped from the company's Pittsburg plant to Porto Alegre, Brazil.

EDITORIAL

Will Government Now Help or Hinder?

■ EXPERIENCE teaches that when steelworks operations pick up at the close of summer the improvement is likely to gain momentum in the fall.

A 20-point rise in the steel rate between the first of July and the end of August, therefore, is heartening.

Building construction is on the upgrade; machine tool builders report better prospects; just ahead are great expectations for the automobile industry; wherever large public works have been started recently used cars have been quickly cleared off corner lots; the season for agricultural implements is coming on; but the railroads and some utilities cannot see through the gloom.

The lift so far has come mainly from miscellaneous sources, and New Deal spokesmen will interpret this as evidence of wider distribution of money. To others, however, it will appear only as proof that business cannot remain flat forever; it must revive in spite of everything.

Brake on the industrial machine is that there have been billions of dollars for pump priming, but little consistent encouragement for business — while the formula should be, and ultimately will be, reversed. The fall election may have far more to do with restoring confidence than repeated pump priming.

Industry Has Gone Far in Conforming to New Deal Pattern

In steel the year has been notable chiefly for two things: A throwback to 1933-34 volume of production; and the extent to which the industry has conformed to the New Deal.

Everyone will remember the administration's blasts as business went into a tailspin last year. It was "a strike against government; treason; sabotage"; and industry as a consequence was "heading blindly down the road leading to government supervision." Of course, business was being supervised as never before; some industries were virtually under the control of government, through various forms of compulsion. But it was a good threat on which to base another political "natural"—investigation of monopolies.

The administration wanted wages held up, so steel stabilized wage rates at their highest levels.

It declared prices were too high; and the industry reduced prices sharply.

It wanted no more identical bids on government work; steel went farther and created the most "open", competitive market it has known in many years.

The administration said the basing point system, as modified within practical limits some years ago and sanctioned by the federal trade commission, needed broader revision; and it was revised, with scores of additional basing points.

Heavy Losses and Taxes Result; What Else Is Wanted?

The industry has "gone along" with government to an unprecedented extent. And the result? So far this year a loss in excess of $20,000,000, mounting at the rate of two to three millions a month. Taxes, in the first six months, taking $46,000,000, or two and a half times the amount of the loss in that period.

The record is cited at this time because it should be made clear, and borne in mind. The industry has given the fullest co-operation, short of letting politicians run its plants.

What can government give in return? Something besides priming the pump? Something to restore confidence; get men back to work at those high wage rates; turn loss into profit, and thus enable the industry to foot more of government's mounting bills? Or, merely more badgering and threats of government supervision?

THE BUSINESS TREND

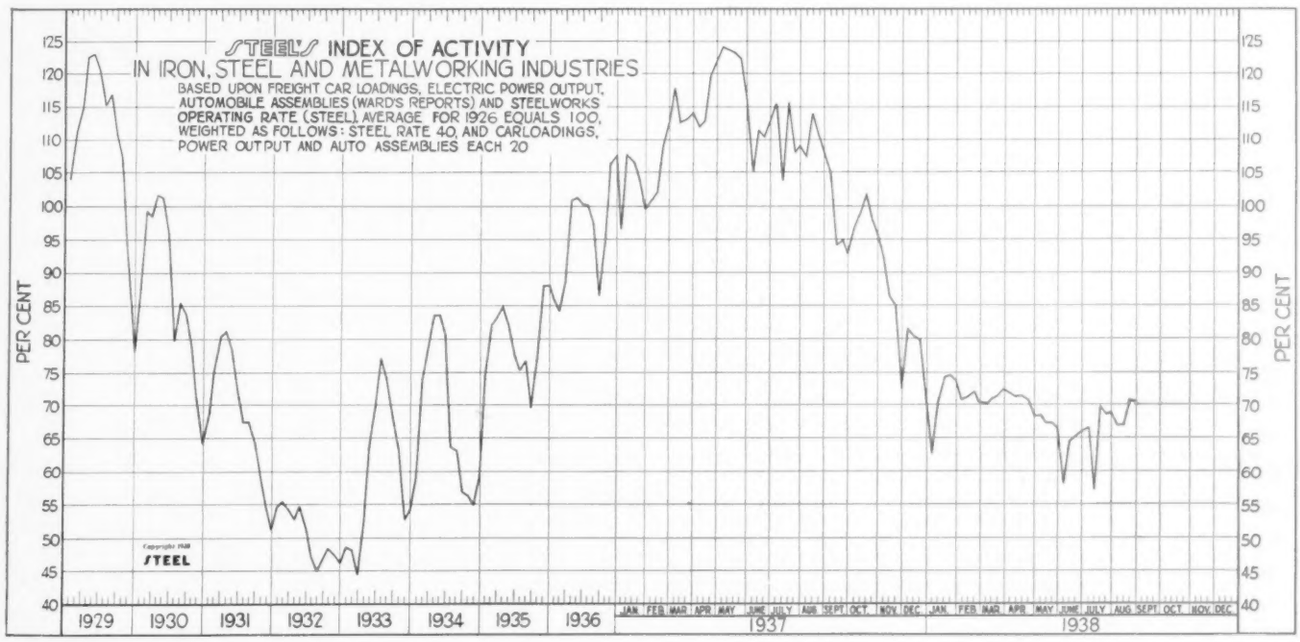
Index of Activity Eases Slightly

■ DESPITE substantial gains in two of the four barometers composing STEEL'S index of activity in the iron, steel and metalworking industries, the index eased slightly to 70.2 per cent in the week ended Aug. 27. This represents a mild decline of 0.3 point from 70.5 per cent in the preceding week. However, excluding the preceding week, the index still remains at the highest level since the week ended April 23.

The rate of steelworks operations gained two points to 43.5 per cent in the week ended Aug. 27. This recent gain has not only forced the steel rate into new high levels for this year, but it now also exceeds any week since Nov. 6, 1937. There are indications that further gains will be registered in the near future, reflecting a normal seasonal increase in consumption among miscellaneous steel consumers and, perhaps of more importance, the anticipated improvement in requirements from automotive sources and also from structural projects sponsored through federal aid.

Revenue freight carloadings increased to approximately 615,000 cars in the week ended Aug. 27. This represents a gain of nearly 17,000 cars over the preceding week and also constituted the highest level this industrial barometer has reached since Dec. 11, 1937. Electric power consumption recorded a slight reaction in the week ended Aug. 27, after registering gains for seven consecutive weeks from the low point this year of 1,881,298,000 kilowatt-hours in the week ended July 9. Power output of 2,134,057,000 kilowatt-hours in the week ended Aug. 27 represents a decline of 7 per cent from the identical week last year.

Reflecting the end of the 1938 model Chevrolet production, automobile assemblies declined 5240 units to 18,700 in the week ended Aug. 27. A year ago the total output was 83,310. Production should gain steadily from now on, after allowing for the interruption oc-



STEEL'S index of activity declined 0.3 point to 70.2 per cent in the week ended Aug. 27:

Week ending	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
May 21	67.1	122.2	100.4	82.8	82.4	65.2	55.1	78.3	102.3	122.0
May 28	66.5	115.6	98.6	71.9	81.9	66.1	54.2	75.7	94.9	112.8
June 4	58.1	105.1	98.8	79.3	75.7	65.3	51.0	73.5	97.9	119.8
June 11	64.4	111.4	99.4	80.0	82.3	69.9	51.1	73.2	96.2	120.1
June 18	65.2	110.3	101.0	77.3	83.6	72.1	51.8	70.9	95.0	120.1
June 25	66.0	112.8	101.9	78.4	81.8	73.9	51.6	70.6	94.0	120.0
July 2	66.5	115.3	97.5	64.1	79.4	77.0	49.2	64.1	75.0	107.8
July 9	57.1	103.8	100.9	76.5	52.3	71.4	41.7	69.4	86.9	116.8
July 16	69.9	115.7	99.9	79.8	67.8	79.1	46.9	70.0	79.1	115.5
July 23	68.7	108.0	102.1	80.8	68.1	79.4	51.5	69.7	78.7	120.8
July 30	69.0	109.1	102.5	78.4	66.4	78.8	46.1	68.9	79.2	117.3
Aug. 6	66.9	107.3	98.7	73.4	64.6	75.9	45.1	67.0	85.6	117.2
Aug. 13	66.9	113.8	92.6	77.5	64.6	74.7	44.6	67.4	86.2	116.8
Aug. 20	70.5†	110.3	97.7	77.0	61.4	74.2	44.9	67.3	88.5	116.4
Aug. 27	70.2*	108.5	94.0	77.3	60.3	71.6	45.2	66.5	87.4	116.9

*Preliminary. †Revised.

casioned by the observance of Labor day. The entire production program appears about a month ahead of the comparative 1937 period, with the result that assemblies in the week ended Sept. 3 will probably record an increase.

INDUSTRAL PRODUCTION INDEX RISES

Reversing the normal seasonal trend, volume of industrial production increased from 77 per cent of the 1923-25 average in June to 83 per cent in July, according to the Federal Reserve board index. However, the index still remains well below the 114 per cent reported in July a year ago. Based on the records for the first three weeks of August, a continuation of the upward movement is expected to be recorded in the board's index for the month.

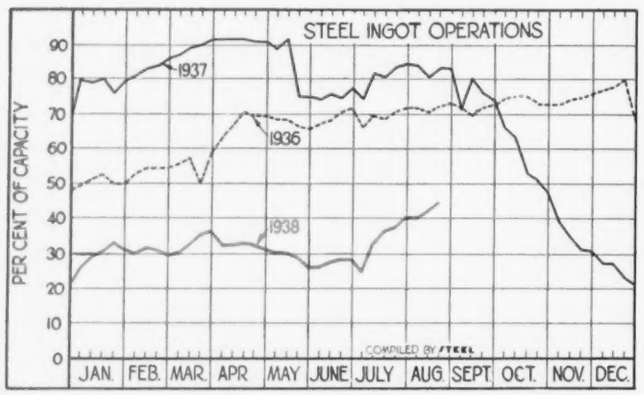
FOREIGN TRADE DECLINES SEASONALLY

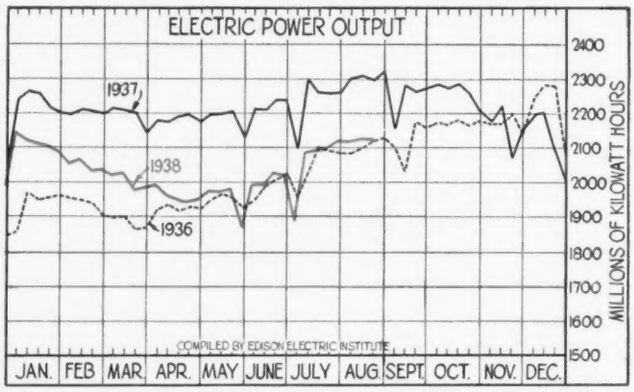
Reflecting the usual seasonal decline during July, which is generally the low point of the year, both exports and imports of the United States were slightly lower in value than in June. Exports including re-exports, amounted to $227,780,000 in July, as compared with $232,686,000 in June and $268,184,000 in July, 1937. Imports amounted to $140,836,000 in July, against $145,898,000 in June and $265,214,000 in July, 1937.

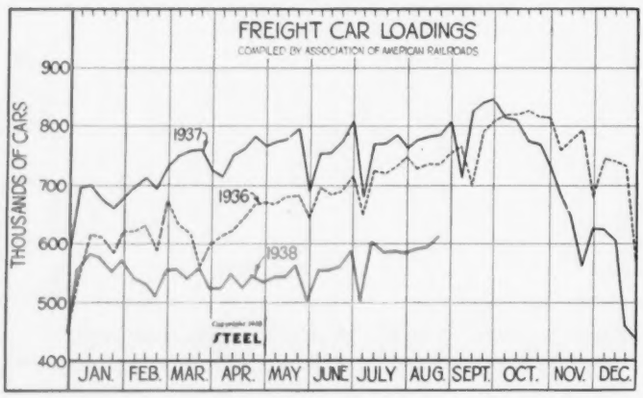
Following the general trend, iron and steel exports, excluding scrap, in July totaled 137,276 gross tons, valued at $9,832,897, compared with 149,955 tons valued at $10,799,161 in June. Imports during July amounted to 14,728 tons, including 634 tons of scrap, compared with 15,887 tons in June, including 314 tons of scrap.

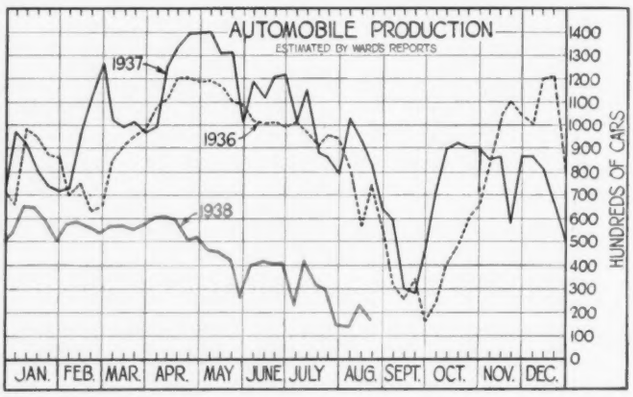
RAILROAD OPERATING INCOME IMPROVES

Net operating income of Class 1 railroads during July amounted to $38,387,209. This represents a substantial gain over the $25,000,803 reported in June but is 37.1 per cent below the $60,985,276 earned in July a year ago. For the first seven months this year the roads reported a net operating income of $109,335,282 compared with $360,451,579 in 1937, or a decline of 69.7 per cent.



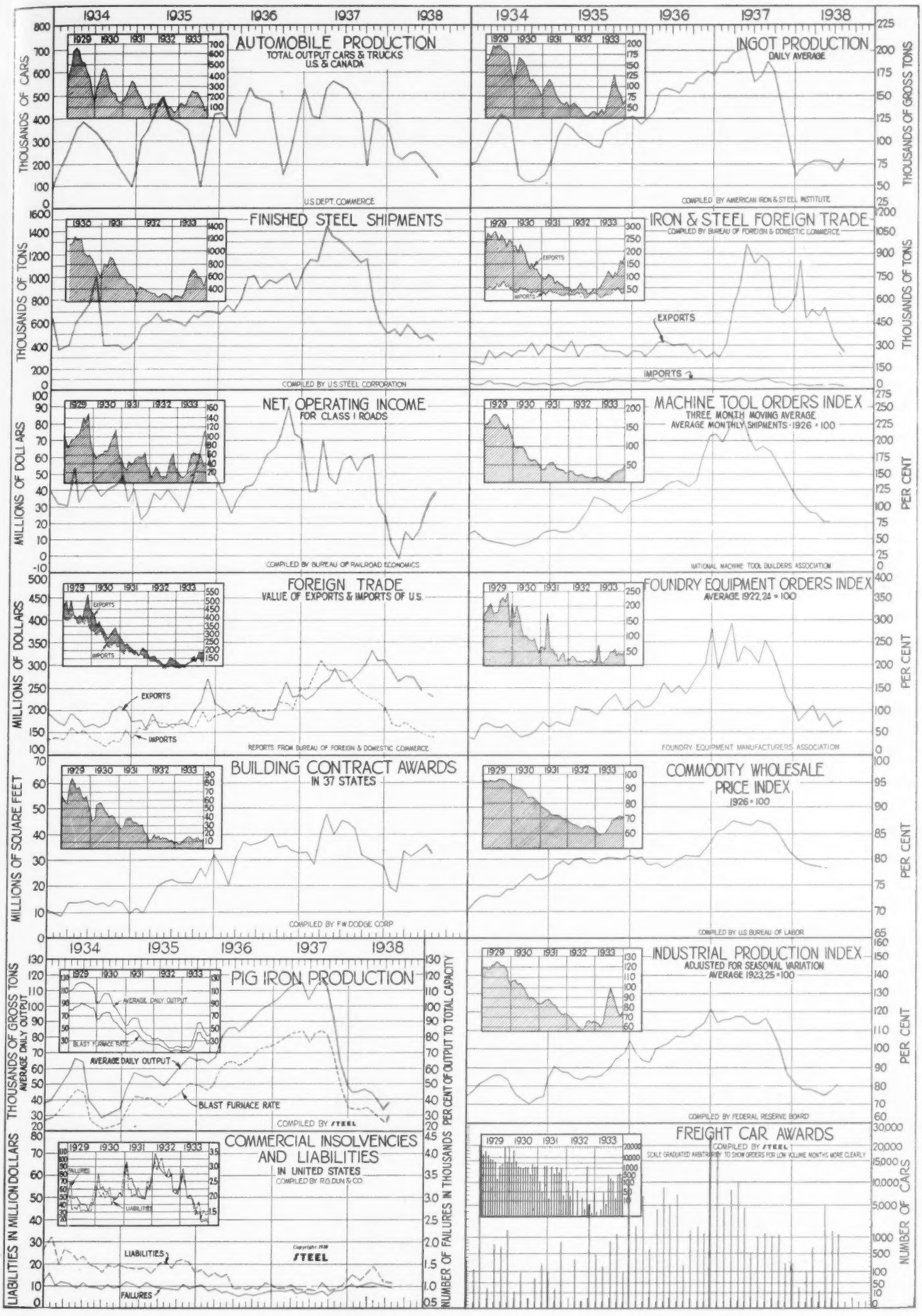






Week ending	Steelworks Operating Rate Per Cent			Electric Power Output Million KWH			Freight Car Loadings			Weekly Auto Output		
	1938	1937	1936	1938	1937	1936	1938	1937	1936	1938	1937	1936
May 21	30.0	91.5	66.5	1,967	2,198	1,954	545,808	779,276	683,406	46,810	131,306	109,821
May 28	28.5	75.0	66.0	1,973	2,206	1,922	562,061	794,855	646,859	45,120	131,421	108,300
June 4	25.5	75.0	67.0	1,878	2,131	1,945	502,624	692,140	695,845	26,980	101,629	101,896
June 11	25.5	74.0	68.0	1,991	2,214	1,989	553,854	754,360	686,812	40,175	118,798	100,415
June 18	27.0	75.5	70.5	1,991	2,213	2,005	555,569	756,289	690,716	41,790	111,620	100,733
June 25	28.0	74.0	71.5	2,019	2,238	2,029	558,937	773,733	713,639	40,918	121,032	99,695
July 2	28.0	77.5	66.0	2,014	2,238	1,956	588,864	806,168	649,759	40,945	122,890	100,697
July 9	24.0	74.0	69.5	1,881	2,096	2,029	501,013	682,205	724,324	25,375	100,981	97,833
July 16	32.0	82.0	68.5	2,084	2,298	2,099	602,300	770,075	720,402	42,010	115,380	91,317
July 23	36.0	81.0	70.5	2,084	2,258	2,088	580,882	770,980	731,062	32,070	88,055	96,863
July 30	37.0	84.0	71.5	2,093	2,256	2,079	588,703	782,660	747,551	30,390	86,448	95,970
Aug. 6	40.0	84.5	71.5	2,115	2,261	2,079	584,050	769,706	728,293	14,771	78,736	81,804
Aug. 13	40.0	84.0	70.5	2,133	2,300	2,093	589,561	777,382	736,497	13,790	103,250	56,679
Aug. 20	41.5	81.0	72.0	2,138	2,304	2,125	597,918†	781,247	734,973	23,940	93,339	73,709
Aug. 27	43.5	83.0	73.0	2,134	2,294	2,135	614,659*	787,373	753,742	18,700	83,310	53,937

*Preliminary. †Revised.


1934 1935 1936 1937 1938
AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
THOUSANDS OF CARS
U.S. DEPT. COMMERCE
INGOT PRODUCTION
DAILY AVERAGE
THOUSANDS OF GROSS TONS
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
FINISHED STEEL SHIPMENTS
THOUSANDS OF TONS
COMPILED BY U.S. STEEL CORPORATION
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
THOUSANDS OF TONS
NET OPERATING INCOME
FOR CLASS I ROADS
MILLIONS OF DOLLARS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS 1926 = 100
PER CENT
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
MILLIONS OF DOLLARS
EXPORTS
IMPORTS
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922-24 = 100
PER CENT
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACT AWARDS
IN 37 STATES
MILLIONS OF SQUARE FEET
COMPILED BY F.W. DODGE CORP.
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
PER CENT
COMPILED BY U.S. BUREAU OF LABOR
1934 1935 1936 1937 1938
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
THOUSANDS OF GROSS TONS AVERAGE DAILY OUTPUT
PER CENT OF OUTPUT TO TOTAL CAPACITY
COMPILED BY STEEL
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1923-25 = 100
PER CENT
COMPILED BY FEDERAL RESERVE BOARD
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES
FAILURES
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES IN THOUSANDS
Copyright 1938 STEEL
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW VOLUME MONTHS MORE CLEARLY
NUMBER OF CARS

Adds 44-Inch Strip Mill

Operating end-to-end with present 76-inch strip mill, new unit has maximum delivery speed of 2200 feet per minute, yearly capacity of 540,000 tons, in thicknesses up to 3/8-inch

■ THE NEW continuous strip mill just installed at Inland Steel Co.'s Indiana Harbor, Ind., plant increases the company's capacity for producing flat rolled steel by about one-third. Capacity of mill is 45,000 tons per month, and thickness of material ranges from 20 gage to 3/8-inch and in widths up to 40 inches.

Maximum delivery speed to coilers or sheet pilers is about 2200 feet per minute. This means a mile of steel a yard wide can be produced in somewhat less than three minutes. New automatic as well as unusually flexible manually operated control devices make it easy to adjust mill quickly for special handling of individual sheet and coil orders.

New mill is but one unit of an entirely new flat rolled steel setup which Inland has been building toward for the past several years. This includes a 76-inch continuous mill installed in 1932, a new modern blast furnace and a new battery of coke ovens put into operation last year, and nine modern open hearths built in 1937 and 1938.

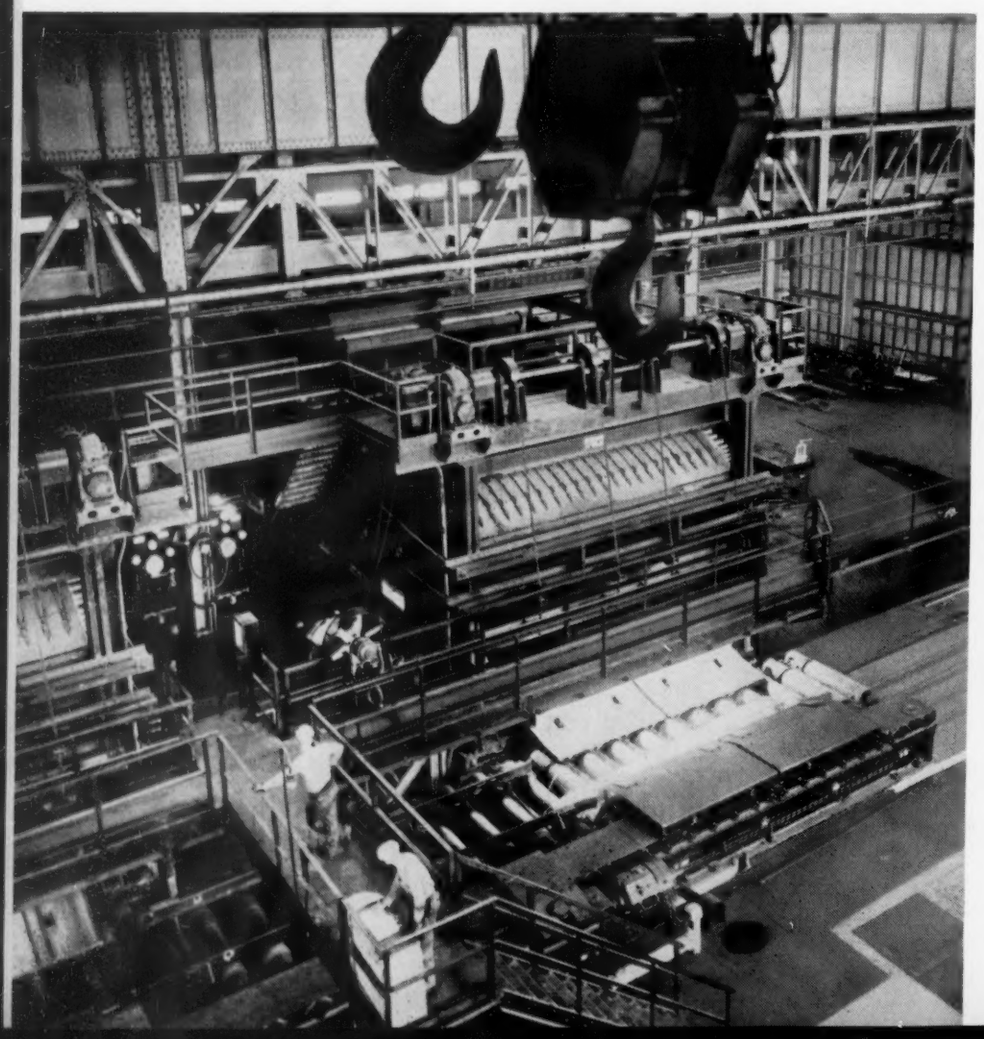
The latest 44-inch continuous mill is built on land extending out into Lake Michigan. Fill was made by pumping sand dredged from the lake bottom into an area surrounded by Inland piling cells which were capped with concrete. Cinder and granulated slag also were used as fill material. To stabilize concrete foundations, wooden piling from 55 to 75 feet in length was driven into the original lake bed.

Operates with 76-Inch Mill

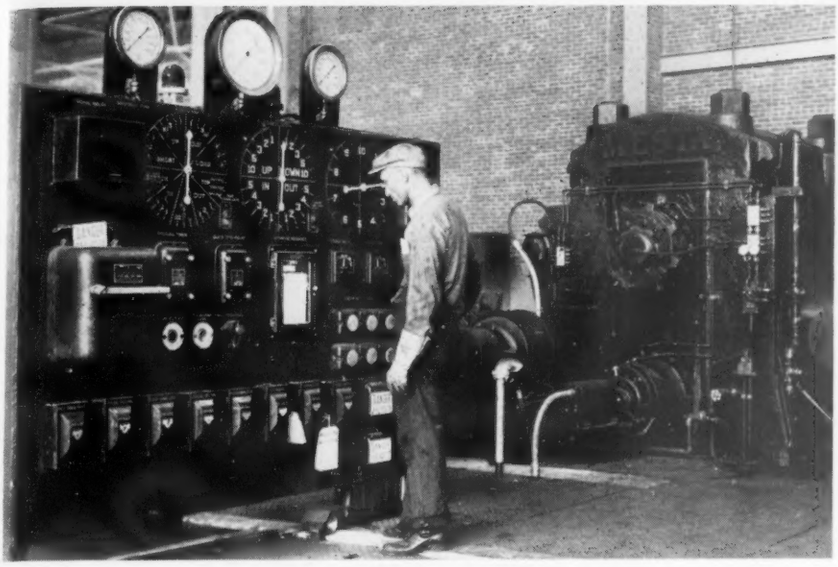
New mill operates end to end with the 76-inch mill. A new 46-inch blooming mill between the two supplies slabs for both mills. Use of hot top ingots in open hearths assures higher quality steel for both mills. Latest type circular soaking pits installed with the 46-inch blooming mill assure uniformly heated ingots before rolling, thus minimizing possibility of surface flaws and inclusions in the slabs.

The company also supplies its own ore, limestone and coal, permitting further control of steel quality.

Slabs used will average 24 inches in width, 4 inches in thickness, 15 feet in length and about 3600 pounds in weight. Types of steel rolled range from low carbon up to 0.95 per cent carbon and 3.5 per cent sili-



Here a hot slab has just been released from one of the slab-reheating furnaces and is starting down the delivery table



Dual control board with Selsyn indicators at end of mill near finishing stands

con. Slab yard has capacity of 18,500 net tons.

The two slab-heating furnaces of 44-inch mill have a soaking zone to insure uniform heating, are triple fired, use oil only for fuel and have a capacity of 50 tons per hour. Insulated suspended arch roof, insulated walls and hearth are used. In addition, furnaces are metal cased. Two recuperators for each furnace heat combustion air to 700 degrees Fahr. average, and 1300 degrees Fahr. maximum. Average fuel consumption is 1,650,000 B.t.u. per ton. Normal temperature of slabs leaving furnaces is 2250 degrees Fahr.

Scale Breaker First Unit

First mill unit is a vertical edger scale breaker. After this are four roughing stands immediately followed by a flying shear which cuts square ends on strip entering finishing stands.

Six finishing stands are installed in tandem. Maximum finishing or delivery speed is 2200 feet per minute. A flying shear operates in synchronism with the last stand. This shear continuously cuts various lengths of flat strip accurately with rolling speeds up to 2200 feet per minute.

Two coilers are provided for coiling strip. These will operate at maximum mill speed.

Handling strip steel at the high speed employed here necessitates that table rollers operate flexibly throughout the entire speed range. Table rollers are driven in pairs by direct-current motors using Ward Leonard controls. Any speed desired from 0 up to 2200 feet per minute is available in each stand.

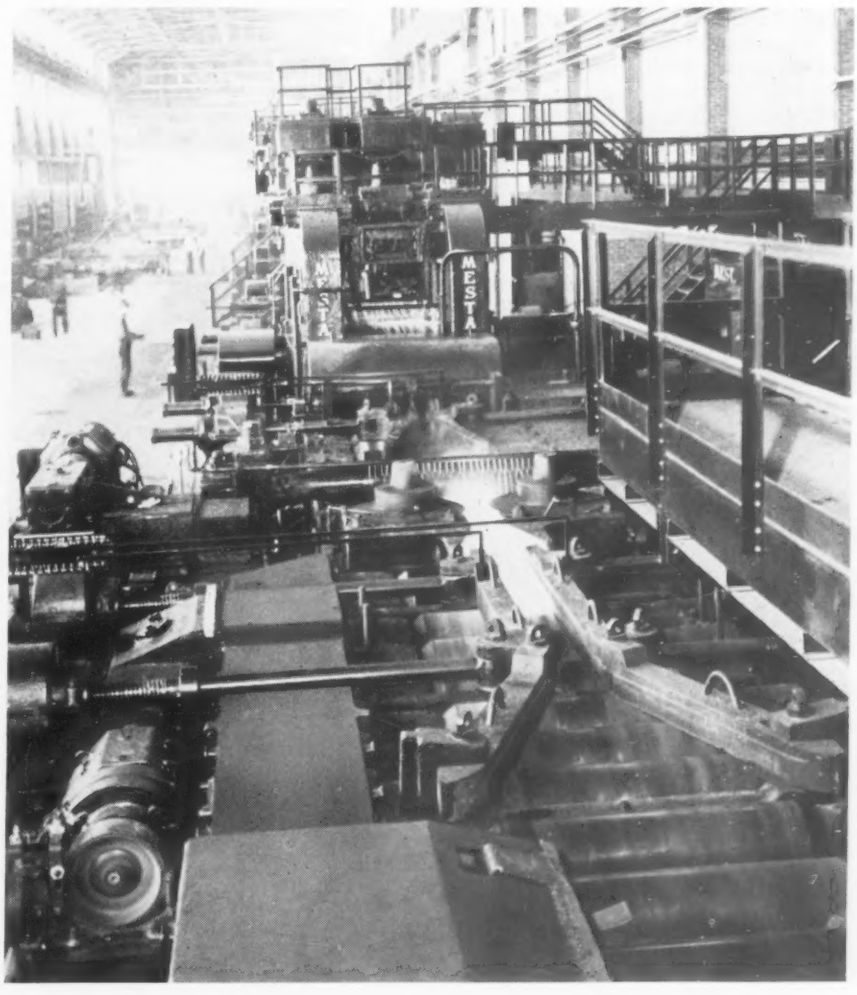
Finishing end of 44-inch mill is equipped to handle coils and flat sheets. A coil conveyor delivers coils to cold strip mill or other departments. A line is provided for side trimming, leveling, shearing and piling sheets cut to lengths. A scrubbing and drying unit also is installed followed by a plate finishing unit consisting of a leveler, shear, trimmer and piler.

For material that needs skin rolling, a single stand skin pass mill is provided. This consists of a tilting table, a regenerative breaking feed reel, a single stand skin-pass mill and a tension reel for skin rolling coils. Additional space in the cold finishing building is provided for future equipment as required.

Handling Highly Organized

Controls of both this new mill and the 76-inch mill are augmented by a highly organized system of handling and checking process against orders that follow the steel from blast furnace to shipping platforms. Each order is individually and periodically checked at meetings of members of the various departments concerned. Slabs are inspected in slab yards between the two mills.

Experience shows that temperature at which strip is delivered from the mill is of utmost importance to surface and internal structure of the steel. Significance of this feature led to installation of a new and rapid temperature recorder which indi-



Hot slab entering vertical scale breaker just ahead of delay table and roughing stands

cates to the mill roller at all times the exact finishing temperature of the strip. A duplicate of this record is automatically made at the slab reheating furnace. Having this information readily at hand at all times enables the heater to deliver to the mill a continuous succession of uniformly heated slabs.

A new type recorder has been installed at entry side of finishing train to maintain any desired temperature of the strip as it enters the finishing stands. A signal light indicates to operator when desired temperature is being maintained.

Facilities for metallurgical control in the finishing department are housed in a convenient laboratory equipped with latest type of hardness and ductility testing machines. To permit maximum control, shipper and foreman offices adjoin. When tensiles, etching and microscopic examinations are required, specimens are sent to main laboratory.

Houses Main Drives

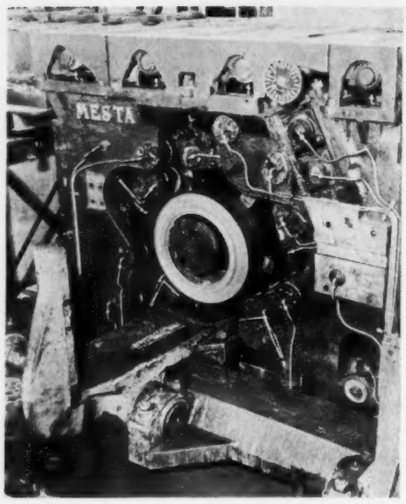
Motor room is located alongside the mill stands and houses all main drives and auxiliary equipment for operation of mills. Sufficient air for maintaining the motor room under a slight positive pressure is supplied from outside the building through an oil filter air washer by a ventilating fan of 40,000 cubic feet per minute capacity. Air used for cooling main drive motors is taken from motor room through the motors, goes through air coolers and is discharged back into motor room.

The scale breaking vertical edger is driven by two 300-horsepower, 500-revolutions-per-minute induction motors. First roughing stand is powered by a 2500-horsepower, 150-revolutions-per-minute synchronous motor. Next three roughing stands are driven by 2500-horsepower synchronous motors at 375 revolutions per minute. Horizontal scale breaker that follows is operated by a 500-horsepower, direct-current motor at 150/600 revolutions per minute.

The six finishing stands are driven by 600-volt, direct-current, 2500-horsepower motors at 225/450 revolutions per minute. Power for these direct-current motors is supplied by two motor-generators sets, each consisting of two 2500-kilowatt, 600-volt, direct-current generators driven by one 10,000-horsepower 6600-volt synchronous motor. In addition each motor-generator set has other generators, one of which is 1000-kilowatt capacity, 250-volt direct-current for general mill service. Another is a 500-kilowatt, 250-volt direct-current exciter generator and a third is a 500-kilowatt, 600-volt direct-current generator which supplies power to the flying hot shear.

Also located in motor room are motor-generator sets for the tables, loopers and auxiliary exciter motor-generator sets for the Ward-Leonard control system. Power is supplied to the motor room from generating stations over 6600-volt, 3-phase, 25-cycle transmission lines.

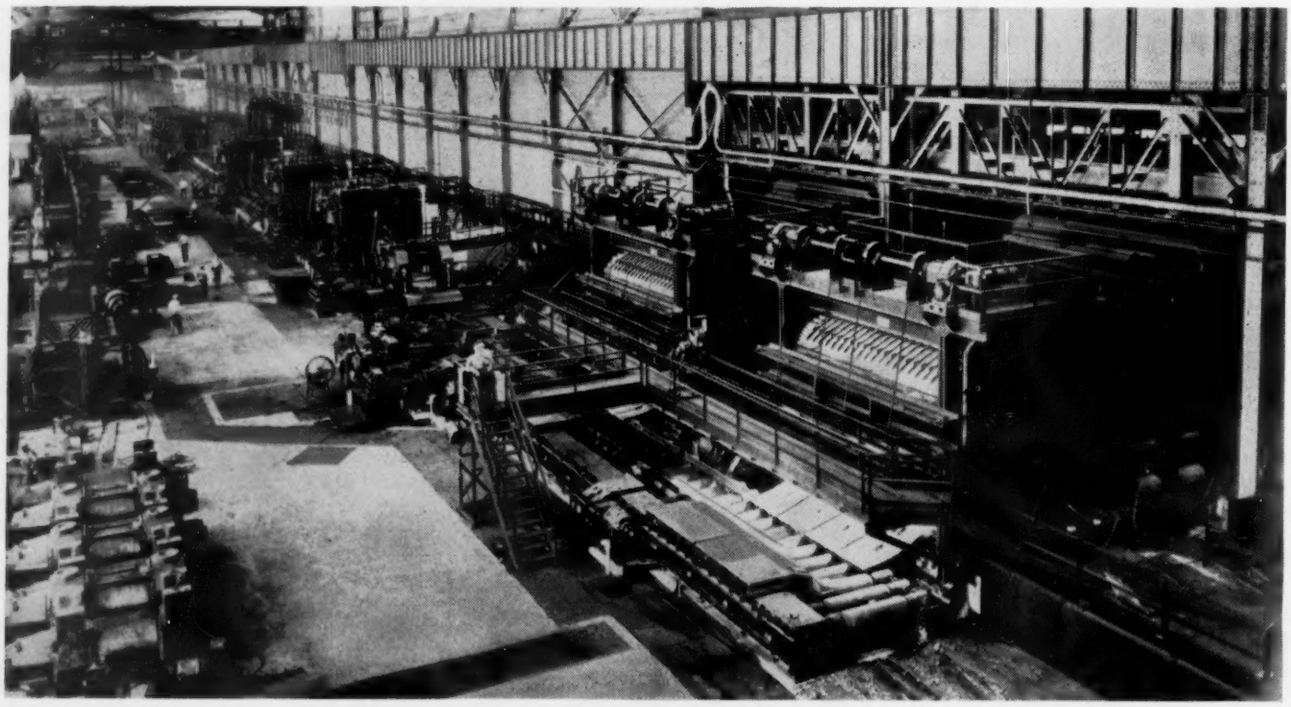
Transformers for auxiliary power and lighting include two 1667 kilovolt-ampere, 6600/2200-volt transformers, two transformer banks of three 500-kilovolt-ampere, 6600/440-volt transformers each and a single phase, 200-kilovolt-ampere transformer for the lighting load.



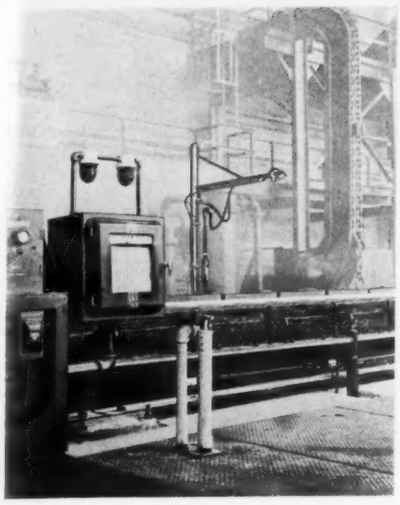
One of two coilers at end of finishing stands. Mill also is equipped with flying shear and sheet stacker for cut lengths

Crane equipment for the mill includes a 3-ton repair crane with a 50-foot span for the furnace building; three 25-ton, 80-foot span cranes in the slab yard, each with a 10-ton auxiliary; a 50-ton unit with 50-foot span and 10-ton auxiliary in the motor room; two 60-ton units with 80-foot span and 25-ton auxiliaries in the mill building; and four 15-ton cranes with 100-foot span in the finishing and shipping building.

Auxiliary motor drives include twenty 440-volt, 3-phase, 25-cycle mo-



Full length view of lineup showing slab-reheating furnaces in foreground with mill stands on down the room



Photoelectric pyrometer automatically records strip temperature on instrument in foreground. Indicating lights and bells signal any deviation from the desired temperature

tors totaling 140 horsepower and three hundred seventeen 230-volt direct-current motors which total 4812 horsepower.

A pumping station located near south end of the new strip mill supplies main service and high pressure water for the spray system. Pumping equipment consists of three 20,000-gallon-per-minute, motor-driven pumps for service water and a 1000-gallon-per-minute, 1000-pound pressure motor-driven pump for the spray system. Both water systems are inter-connected with other similar pumping systems located in the plant.

Four-high stand and control pulpit on floor at right

Brass Plate Adhesion Method Cited As Best

■ According to J. D. Morron, manager motor products development, United States Rubber Products Inc., Detroit, the best method of rubber-to-metal adhesion is by means of brass plate, which is not thermoplastic and gives good adhesion at all points.

Satisfactory adhesion by this method depends upon four factors: Proper selection of metal to be plated; proper quality of plating; proper compounding of rubber stocks; and correct process control throughout. Brass may vary from 65 to 85 per cent copper, although general practice is to use 70 per cent. SAE hot-rolled steel is particularly desirable as a base metal, although steel of various carbon contents, cast iron and many alloys can be plated. Most steel, with exception of magnesium alloys, can be plated for adhesion, but special procedures are generally necessary. Adhesion may be obtained with cold-rolled steel, though bond is unreliable owing to smooth, fine-grained surface of the metal.

Cleans Concrete Floors

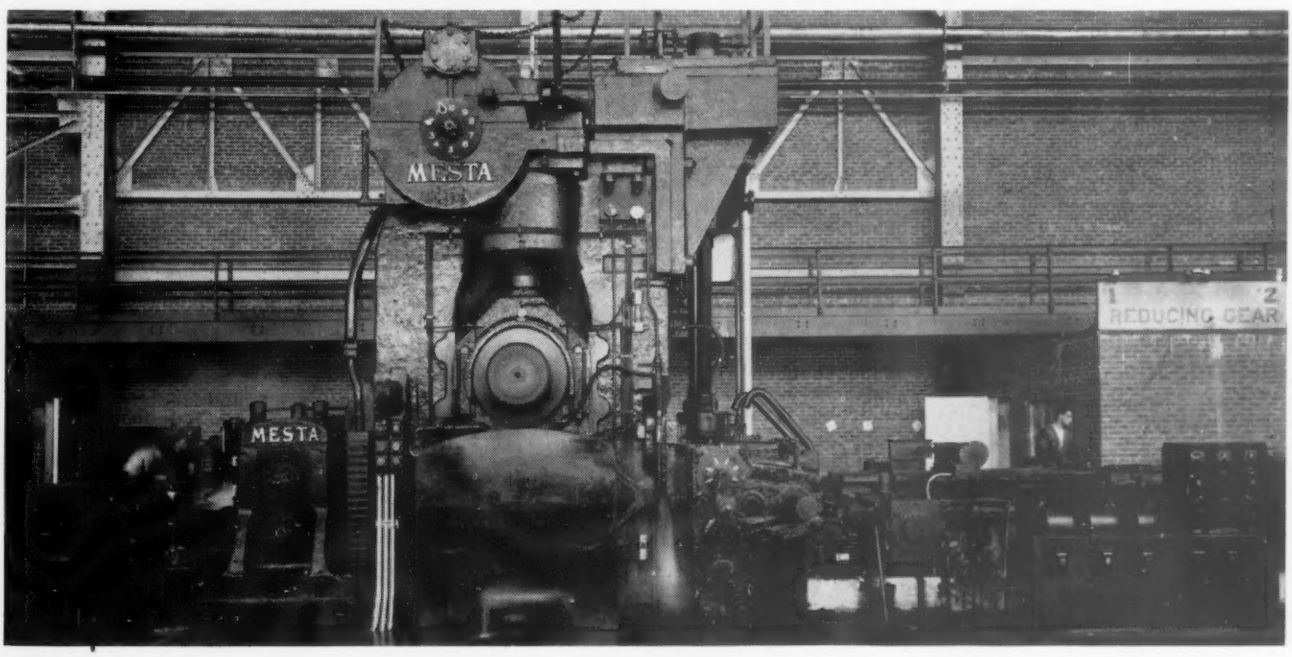
■ The problem of keeping concrete floors and driveways free of dirt and grease is said to be solved by a new cement cleaner, recently introduced by Magnus Chemical Co., Garwood, N. J.

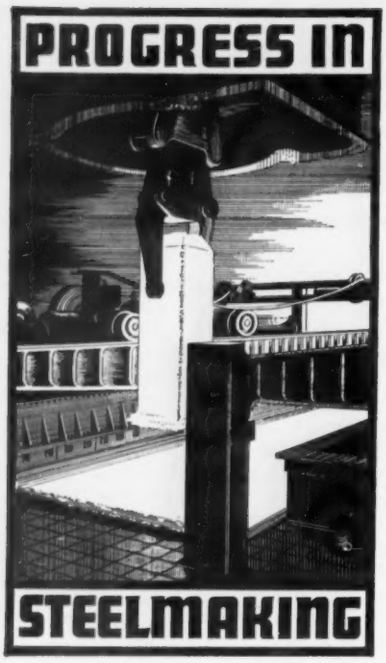
Surface to be cleaned is wetted down, sprinkled lightly with the cleaning compound and agitated with a brush. After having been allowed to stand about 10 minutes, it is scrubbed again and flushed with water. This cleaning is said to be accomplished at a cost of about 3 cents per 100 square feet. Chemical is non-inflammable.

To Exhibit Model Seamless Tube Mill

■ One of the many interesting exhibits of the Iron and Steel exposition, which is to be held in conjunction with the 34th annual convention of the Association of Iron and Steel Engineers, in the Cleveland Public Auditorium, Cleveland, September 27, 28, 29 and 30, 1938, will be an animated model of a new seamless tube mill recently installed by Youngstown Sheet and Tube Co., Youngstown, Ohio. Plans for this model mill were converted into proper scale and the model constructed in its entirety, with the exception of casting of housings, by skilled mechanics employed in pattern and machine shops of Youngstown Sheet and Tube Co. The model will actually roll seamless pipe from lead billets.

The new mill, of which the model is an exact replica, is the first large seamless tube mill built in this country in over seven years. All the latest developments in mechanical and electrical design are incorporated in the new equipment, from blooming mill to automatic pipe length recorders. Construction and rolling principles used in modern continuous strip mills have been applied in the design of the mill, which has a rated capacity of 300,000 tons per year. The new mill, part of a general development and improvement program just completed in Youngstown Sheet and Tube's seamless pipe division, was designed and built by the Aetna-Standard Engineering Co., Youngstown, Ohio.





Boiler Control

Unusual automatic control systems assure maximum efficiency in boilers which handle heavy rapidly swinging loads. Both blast furnace gas and pulverized coal used for fuel

By L. T. PEARSALL

Assistant Superintendent
Steam Efficiency &
Combustion Department
Jones & Laughlin Steel Corp.
Pittsburgh

■ IN 1930 Jones & Laughlin Steel Corp., partly to replace obsolete low pressure boilers and partly to increase power generating capacity, installed four straight-tube cross-drum boilers at its Pittsburgh works. These boilers each have 24,940 square feet of heating surface, operate at 450 pounds gage pressure and are provided with interdeck superheaters which raise the steam temperature to 725 degrees Fahr.

Combustion air is supplied to each boiler by a single forced-draft fan taking its supply from the refractory air-cooled walls of the setting and discharging through an air heater located at top of boiler. Waste gases are drawn out by two induced-draft fans in a common housing directly above the air heater. All fans are driven by steam turbines exhausting to the deaerating heater at 3 pounds back pressure.

A diagrammatic arrangement of the boilers is shown in Fig. 1. The 1930 installation consisted of boilers No. 7 and No. 8 which are combination blast-furnace-gas and pulverized-coal fired and boilers No. 10 and No. 11 which are fired by blast furnace gas alone. The blast-furnace-gas-fired boilers have a capacity of 225,000 pounds of steam per hour each while the combination-fired boilers are limited to 187,000 pounds per hour because of slagging trouble encountered at higher operating rates.

Bin System Used

In the combination-fired boilers, gas is burned through two burners at one end of the combustion chamber while coal is burned through four burners arranged in two decks at the opposite end. The bin system of pulverized-coal firing is used. Each combination-fired boiler is served by a 50-ton capacity bin.

Control of these boilers is of interest principally because of the complications involved by the combination of fuels and the safety features provided. The Hagan system of combustion control is used. There is one master control panel for the primary control of all boilers. At each individual boiler there is a panel for the control of that particular boiler. Gas and coal control are interlocked but will be described separately for clearness.

The gas supply to each boiler is controlled by a master regulator which admits gas in accordance with steam pressure so long as the gas pressure is above a predetermined amount. If, however, the gas pressure should drop below this point, the control of gas is taken over by the gas pressure controller and only that amount of gas which can be spared from the system is allowed to enter the boiler. This control comes in operation first on the boilers which are equipped to burn pulverized coal, the control being set to operate at a higher gas pressure on these boilers than on the straight gas-fired ones in order to assure the maximum gas supply to the latter. Air supply to gas burners is controlled to give an air pressure in the burner equal to the gas pressure; design of burners being such that under these conditions the correct ratio of air to gas is maintained.

If the forced-draft fan should fail, the damper in the air duct will automatically close, an air inlet into the burner will be opened through which air will be drawn by furnace suction and the gas valve will

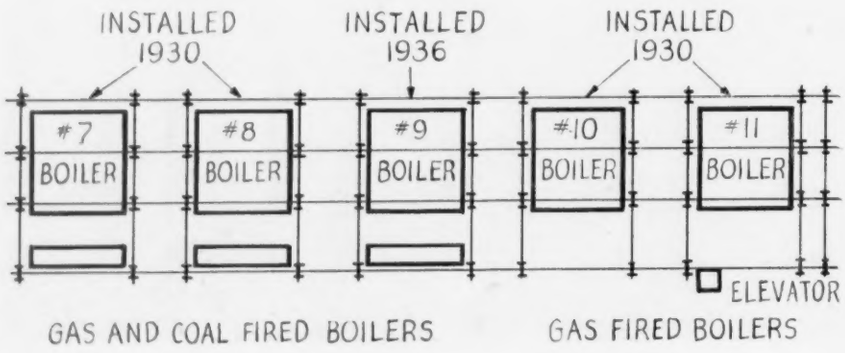


Fig. 1—Diagram showing relative positions of the four boilers. Boiler No. 9, center, was installed to carry additional needs of continuous strip mill

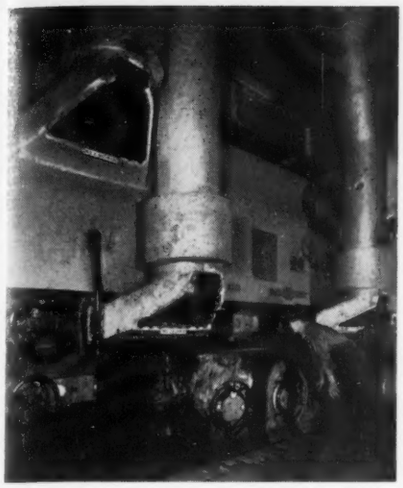


Fig. 2—Front view of No. 9 boiler showing the four burners. No. 1 burner is at extreme right, partially hidden by No. 4 burner

be closed to that point at which only the gas which can be burned by the induced air will be admitted.

In case the gas supply is not sufficient to maintain the required steam pressure, pulverized coal is introduced automatically to the furnace. With all available gas being fired, a drop in steam pressure starts one burner on the first boiler at half capacity; a further drop brings in the second burner and so on until all four burners of one boiler are operating at half capacity. Should there continue to be insufficient steam pressure, the four burners of this boiler are brought up to full capacity. If, after this is done, the pressure is still low the second boiler is brought in on pulverized coal in a similar manner.

Pressure Check Provided

Under the above conditions, a sudden return of gas supply might introduce more fuel into the furnace than could be burned with the air supplied by the forced draft fan or the induced draft fan might not be capable of removing the products of combustion. To guard against this danger, an excess furnace pressure check is provided which automatically slows down the coal burners when the furnace pressure reaches a predetermined amount so only enough fuel is admitted to burn without building up a pressure in the furnace. This insures the boiler operating at maximum capacity. As the steam pressure rises, the master controller gradually cuts out the coal supply.

Should the induced draft fan fail, the fuel supply will be reduced automatically to the amount which can be burned under conditions of natural draft. The forced draft fan will continue in operation but the air supply will be dampered to suit the requirements of the reduced fuel supply.

Any or all of the automatic controls may be switched on to hand control whenever desired.

In 1936 the construction of the 96-inch continuous strip mill made it necessary to provide additional steam generating capacity. While the estimated additional requirements could be met by installation of the fifth or No. 9 boiler, duplicating the combination fired boilers No. 7 and No. 8, together with operation of some of the older low pressure boilers, the balance between generating capacity and demand would be somewhat close. Also any further increase in demand could then only be met by the installation of a sixth boiler which would be a very expensive installation because of physical conditions.

The largest part of the additional load imposed by operation of the strip mill is required for the hot-mill main drive. This load consists of a series of violent swings which occur at too frequent intervals to be met by changes in steam generating rate and which therefore must be supplied temporarily by heat stored in the boilers.

It was decided, therefore, to install a boiler which would give the maximum steam generating rate and provide the maximum water holding capacity in the space available. For a number of reasons it was desirable to follow as closely as possible the general design of the boilers already installed so a boiler following that general design but with the addition of water walls, with a larger steam drum and designed for 475 pounds gage drum pressure was installed. The higher drum pressure was required to allow for increased steam flow and still maintain the desired header pressure.

This boiler has 25,855 square feet of heating surface exclusive of the water walls which have 4065 square feet. It is provided with an inter-deck superheater arranged for control of super heat by means of by-pass dampers operated from the control board through a manual control. It has a tubular air heater, four inter-tube gas burners and four pulverized-coal burners. Maximum continuous steam generating rate is 400,000 pounds per hour either with pulverized coal entirely, or with 60 per cent gas and 40 per cent coal.

Control Is Independent

Control of this boiler is similar to control of older boilers but differs in detail and is entirely independent in its operation. Because of greater capacity of the new boiler, both as to generating rate and heat storage, it is desirable to throw the strip mill swings onto this unit as far as possible. To do this, maximum drum pressure should be carried at all times. This could not be done if the firing rate were controlled by the master controller actuated by header pressure and for this reason the firing rate of this boiler is controlled independently, from its drum pressure.

This change in itself, however,

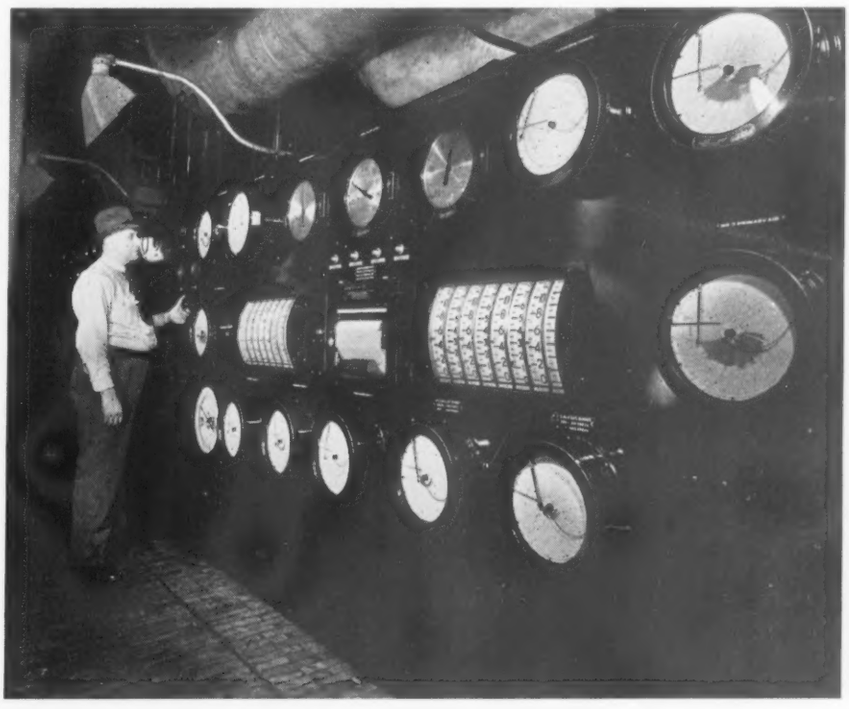


Fig. 3—Master control panel of No. 9 boiler. This boiler operating on both gas and coal was designed for 475 pounds gage drum pressure

would not answer the purpose as under these conditions this boiler would operate at nearly a uniform rating with the fluctuations being mostly taken by the older boilers.

To overcome this difficulty, a somewhat novel arrangement was incorporated. This is probably the most interesting feature of the control of this station. It consists of a variable resistance in the form of a butterfly valve placed in the lead from boiler to header. The opening of this valve is controlled from header pressure and means of adjustment are provided by which the opening of the valve, or resistance imposed under normal conditions, may be adjusted to give any desired rate of flow. That is, assuming maximum drum pressure of 475 pounds and normal header pressure of 425 pounds, the flow may be held at any rate below 400,000 pounds per hour.

When a sudden steam demand occurs with consequent lowering of header pressure, valve opening is increased and rate of flow increases. Amount of increase is controlled by the increased pressure head, caused by the lowering of the header pressure, and also by the amount due to the reduction in resistance imposed by the accumulator valve.

As rate of flow from the older boilers is increased only by amount made possible by increased pressure head due to lowering of header pressure, the greater percentage of the demand is thrown on the new boiler with its greater heat storage capacity. As drum pressure falls due to the increased rate of flow, the Hagan control comes into operation increasing firing rate by steps.

No. 9 boiler was put in operation about February 1, 1937, and the control has met all expectations. With short swings of moderate extent, header pressure is maintained simply by operation of accumulator valve while boiler operates at nearly uniform generating rate. With swings of such extent that the accumulator valve opens to its fullest extent, the boiler eventually attains maximum generating rate and continues at this rate until normal conditions are restored.

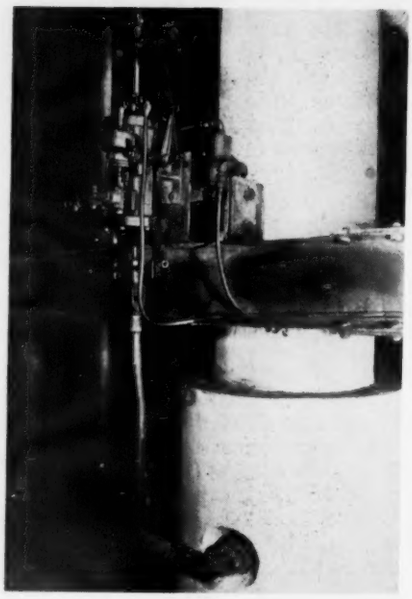


Fig. 4—Butterfly valve in lead from boiler to header. This permits No. 9 boiler to be controlled by its drum pressure independently of the other units which are controlled by a master controller operated by header pressure

Fig. 5—This is the feed water control panel

In addition to accumulator valve and control of firing rate from drum pressure, two other points of difference in control of No. 9 boiler have been introduced. These are that control of firing rate acts on the pulverized coal burners only and that fuel-air ratio is obtained by metered flow instead of simply balanced pressures.

Boiler Is Coal Fired

This boiler is primarily coal fired, as the older units under normal conditions offer sufficient outlet for all the blast furnace gas available. Gas burners are provided so if the older boilers should fail to use all gas available, the new boiler will act as a bleeder for the surplus to prevent waste through the atmospheric bleeder. Capacity of the burners is limited to the amount of gas sufficient to generate at the rate of 225,000 pounds of steam per hour, or the equivalent of maximum rating of the straight gas fired boilers. Automatic control of rates below this are not necessary and the added complications of the dual control could not be very well justified.

Owing to the water cooled walls in the combustion chamber, burners which maintain correct gas-air ratio by means of balanced pressures could not be used and the correct ratios in the case of this boiler are maintained by means of metered flows. For this purpose the physical limitations imposed on duct layout made the use of orifice impossible and modified forms of pitot tube are used.

Power requirements of the induced draft fans are so great, owing to the large volume of gases and higher resistance through the boiler and air heater, that the exhaust from the turbines could not be absorbed in the deaerating feed water heater. These units are therefore driven by high-back-pressure turbines which exhaust at 150 pounds pressure into the low-pressure steam system.

♦

Fuel Oil Specifications

■ American Society for Testing Materials has issued revised tentative specifications for fuel oils and has announced a new method for testing sediment in fuel oil by extraction. Copies of the revised specifications and data on the new test for sediment can be obtained in pamphlet form from headquarters of the society at 280 South Broad street, Philadelphia, at 25 cents each.

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UNITED STATES STEEL

Helps Lay Out A New Plant

■ RECENTLY General Motors Corp. had occasion to build a new plant especially designed for the manufacture of a new type of disk clutch. It was desired to build the plant around the two fabricating lines which were planned. Each of these lines was to contain a separate and complete set of manufacturing operations. Each line was to utilize a trolley-type conveyor system to transfer parts between operations so it was desirable to arrange machine tools and processing equipment to use a direct flow of work between operations.

All Space Utilized

Since a new building was to be built, it was highly desirable to lay out these complete fabricating lines so all space could be most efficiently utilized and the building made no larger than necessary. This was made possible by constructing to scale three-dimensional models of all machines and equipment entering into the manufacturing operations.

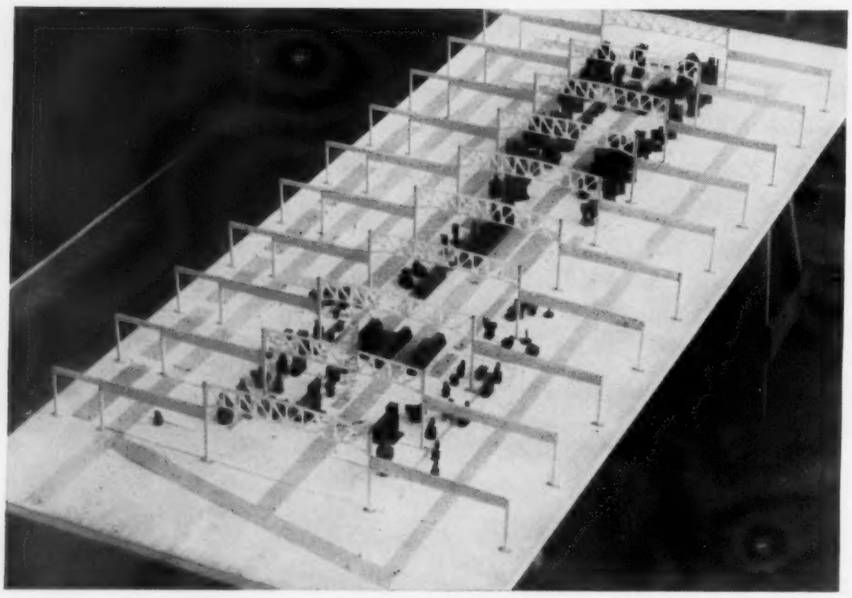
Items of machinery such as presses, machine tools, heat treating furnaces and similar equipment were made up in small models to a scale of ¼-inch to the foot. This was not difficult as outline dimensions were available from equipment manufacturers.

Use of these models was found to be extremely helpful in designing the new clutch plant at Inland Mfg. division of General Motors Corp., Dayton, O. Not only was it possible to visualize perfectly the arrangement of equipment but several steps became evident where economies could be obtained by rearranging equipment. Also, several rather serious difficulties were avoided.

For instance, one of the large punch presses required assembling in the plant as it was too large to ship complete. Allowanace had to be made for several feet of space above top of press for assembling operations at the plant. As originally laid out it was found that this press came directly under one of the roof trusses which, although it provided sufficient clearance for the press itself, did not furnish the space required for assembling the machine which would have meant relocating the press after it has been assembled.

The designers of this plant have suggested that if equipment manufacturers would make available to their customers three-dimensional scale models either of wood, bakelite, rubber or some other similar material, that it would greatly facilitate laying out plants and fabricating lines. A uniform scale of ¼-inch to the foot would make such models of much value.

Also use of such models would greatly facilitate the work of rearranging equipment, a continuous process in most large manufacturing plants because frequent design changes due to new models and new products necessitate adding new equipment and continuous revamping of fabricating line to produce most efficient operation.

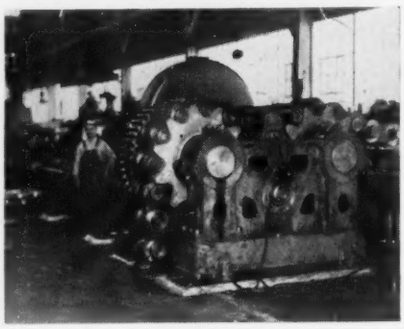


Three - dimensional models of all equipment prove of value in laying out a new clutch plant at Inland Mfg. division of General Motors Corp., Dayton, O.

Flame-Shaping Hoist Sprockets

■ AN INTERESTING recent cutting and welding job was entailed in fabricating 156 sprockets for hoist machinery used in connection with spillway gates at several new dams.

All sprockets were 48 inches in diameter, with 18-inch center holes, and were made from steel plate 3 to 5½ inches thick. Rings were cut out on an automatic oxyacetylene machine provided with circle cutting attachment. Rings then were preheated to 700 degrees Fahr. and teeth cut out by a torch automatically guided by a templet tracing mechanism.



Sprockets assembled on mounts with section of link-and-pin chain. Photos courtesy The Linde Air Products Co., New York

Final spillway gate hoist consisted of two hoist mounts, each having two 18-inch axles on which three of the flame-cut sprockets were welded. A 5½-inch thick sprocket was placed in the center of hoist chain with a 3-inch thick sprocket at each side as shown in the accompanying illustration. Chain link pins ride between the sprocket teeth. Sprockets met requirements of engineers and also were produced in extremely short time.

Aids Refractory Life

■ George F. Pettinos Inc., 1206 Locust street, Philadelphia, has developed a new high temperature cement called Sonittep No. 2900. Its characteristics include the same coefficient of expansion as the brickwork itself, a strong air bond and low shrinkage. A tight bond as well as original physical and chemical characteristics are maintained throughout temperatures well above 2900 degrees Fahr., it is claimed.

Its applications include use in setting up firebrick in boilers, combustion chambers and furnaces of all types. In setting up cupola blocks and brick, its thin tight bond is said to reduce metal penetration.

British Committee Reviews Work on Atmospheric and Marine Corrosion

■ TENTATIVE conclusions arrived at by the joint corrosion committee of the British Iron and Steel institute and the British Iron and Steel Federation are set forth in the committee's fifth report just issued (STEEL, June 13, p. 71). These conclusions, although not final, are of importance since they represent the results of intensive study of the corrosion problem over a 10-year period.

Because of the wide-spread interest in corrosion and because this investigation is the most comprehensive yet undertaken, the conclusions thus far reached are worth noting. They appear as follows:

Atmospheric Corrosion

1. The rate of corrosion of unprotected rolled iron and steel in the atmosphere ranges up to about 0.006-inch per annum, depending on the locality and in particular on the atmospheric pollution. Corrosion rate has a tendency to decrease with time.

2. Character of the rolling scale is important, at least during early stages of exposure.

3. Of the wrought irons tested, those containing appreciable amounts of slag are more resistant than mild steel, but a purer variety, containing but little slag, is less resistant than mild steel.

4. Corrosion resistance of ingot iron does not differ appreciably from that of ordinary mild steel.

5. Use of copper or chromium, or both, in low alloy steels renders these materials appreciably less corrodible than mild steel. It is considered that use of such steels would be economically advantageous under severe atmospheric conditions.

6. The maximum reduction in corrosion observed in the committee's tests resulting from the addition of small amounts of alloying elements to ordinary steel is about 40 per cent.

7. Since low-alloy steels are by no means incorrodible, some form of protection remains necessary for all ordinary structural work.

8. Steel railway sleepers should give satisfactory service so far as resistance to corrosion is concerned, and, if necessary, this resistance can be increased by use of copper-bearing steel.

9. For painting steel structures, sandblasting or pickling followed by application of an inhibitive priming coat such as red lead, preferably applied in the shop, is recommended.

10. Paint failure spreads less rapidly on copper-bearing than on ordinary mild steels, and use of the former steel is suggested when maintenance will not be thorough.

11. Application of paints requires care and supervision.

12. The possible use of metallic coatings, particularly in the tropics, merits attention.

Marine Corrosion

1. Descaling of iron or steel prior to the initial painting is recommended in the case of structures that are to be immersed in water.

2. In the case of plates in ships' bottoms, no serious corrosion should occur under normal conditions if the maintenance is thorough.

3. Dry docking and repainting at 6-monthly intervals is good practice, and should eliminate all fear of serious corrosion, if care is taken that the work is carried out under good conditions.

4. Local damage to the paint, coupled with electrical leakage, may cause serious pitting on a ship's bottom plates.

5. Further pitting in ships' plates can be stopped by application of a sprayed metallic coating, or by the older method of scraping out the pits and filling them with gold size before repainting.

The corrosion committee's report, which contains 448 pages replete with 89 illustrations and 194 tables, present detailed information sustaining the foregoing conclusions. Also incorporated in the report are a number of papers describing research projects on various phases of corrosion.

New Refractory Replaces Inner Brick Lining

■ Substantial savings in operating costs as well as in cost of installation are said to result from the use of a new refractory coating medium in heat-treating furnaces. This product, known as Super Thermo-Stucco, is an air-setting, strong bonding mix of high fusion, manufactured by Chicago Fire Brick Co., Chicago.

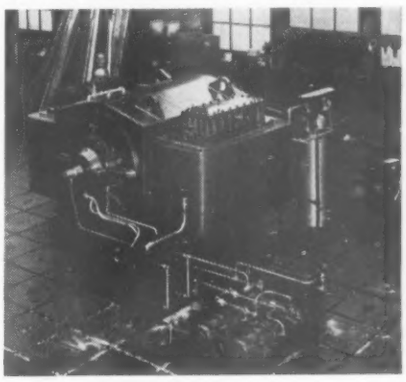
The coating makes unnecessary the use of an inner lining of regular fire brick which may be employed only as a protection for the insulating fire brick. This permits insulating fire brick to be placed within ¼ to ½-inch of the combustion chamber. It is recommended that the coating be ¼-inch thick. One hundred pounds of the mixture will cover about 36 square feet to a thickness of ¼-inch.

In addition to obtaining more flexible temperature control, large fuel economies are claimed through the elimination of 4 inches or more of non-insulating material. This is according to reports from users based on several months of service. Life of coating is said to be approximately that of fire brick, with materially lower initial cost.

Induction Motors Ventilated by Gas

■ The first two motors of their type and construction, involving one of the most unusual induction motor designs ever built, have been constructed for service where exposed to explosive and inflammable vapors. These are 2-pole, 50-cycle, 2300-volt induction motors, rated at 1000 horsepower at 3000 revolutions per minute. Inasmuch as such size of motor is beyond the range of labeled explosion-proof class I group D design, these motors are provided with a closed-circuit system of ventilation incorporating surface air coolers for removing heat, as well as a valve arrangement for continuously injecting a small amount of inert carbon-dioxide gas. These features, together with tight enclosures and special seals, provide the operator with a complete arrangement for maintaining a noninflammable atmosphere within the motor.

The closed-circuit cooling system, which is unusual for high-speed induction motors, involves directional ventilation. Highly efficient, specially designed, propeller-type fans force the inert mixture over the motor windings through ducts, and then through surface coolers which extract the heat before the mixture is again circulated.



Enclosed General Electric 40- kilovolt-ampere capacitor for power factor improvement which helped save $445 on a $550 investment

A forced-feed lubricating system furnishes oil to the bearings under pressure by means of two pumps. These pumps operate continuously to maintain a liquid seal at the bearings at all times. These motors were designed and built by General Electric Co., Schenectady, N. Y.

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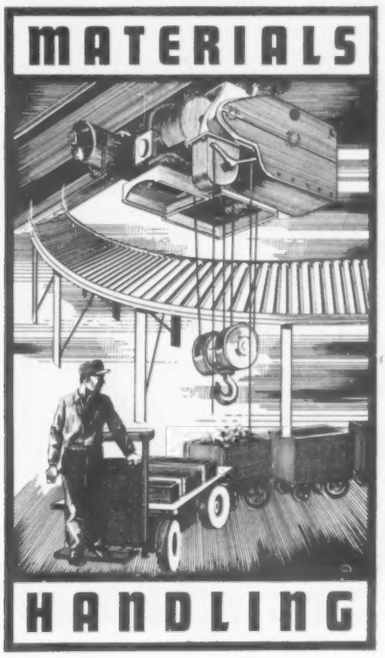
EDISON STEEL STORAGE BATTERIES



Improves Storage

Cranes use special grabs to increase safety and storage capacity in plant handling and storing steel sheet and coil stock. Fatigue is also greatly reduced

By J. BRESLAV
J-B Engineering Sales Co.
New Haven, Conn.

■ A. C. GILBERT CO., New Haven, Conn., manufactures erector sets, electric trains and other toys. In November 1937, W. F. Gilbert decided that the lowered rate of activity at that time would offer an excellent opportunity to study handling in their warehouse.

Previously, due to the limited number of car loads of steel handled yearly and to the fact that it is very important that the steel used be protected from the weather during shipment, incoming sheet steel was received in box cars. A four-wheel truck was moved into the car and piled with sheets. The entire load then was brought down to the store-room where the sheets were individually handled into piles.

Installs Crane

A study of more modern methods resulted in the decision to install, in the warehouse, a crane equipped with a labor-saving grab for handling sheets in 3000-pound loads. It also was desired to stock coils so as to increase the amount of material that could be stored in a given space.

At about the time this decision was made, the company determined to move a Chicago subsidiary to New Haven and to erect a new building to house it. This gave Mr. Gilbert an excellent opportunity to carry out further economies in storage which he had planned.

Incoming material is received by both rail and motor truck. Most of the sheet stock which of course varies in width and length is received in box cars. Because of the fact that the quantity received does not as yet justify shipment in open cars and the installation of the necessary handling equipment at the cars, the sheet stock is still shipped in box cars as formerly. It is loaded on to a hand truck at the car and pushed a short distance to an elevator which takes the truck to the basement where steel is stored.

However, instead of lifting each individual sheet into a pile as formerly, the entire truck load of steel sheets is lifted by the Mansaver grab as shown in Fig. 1. It now is possible to stack the sheets to a much greater height than could safely be used formerly. This has resulted not only in a decrease in

Fig. 1—Grab facilitates handling of sheets in packages into storage

labor but an increase in the amount of steel which can be stored in a given floor space.

Since a pile of steel one foot high and occupying four square feet of floor space weighs a ton, five additional tons of sheets 24 inches wide x 10 feet long may be stored in each additional foot of height to which the sheets may be piled.

Coils of steel are usually received by motor truck at this plant, the same as formerly. Previous practice was to handle two coils on a lift truck platform with coils resting on their circumference; that is, on edge. Piling one coil on the other was not desirable, however, as it is essential to guard carefully against scratching coil surfaces. In addition, the steel coils are extremely heavy and piling more than two high puts an excessively heavy load on the bottom coils, tending to distort them.

Accordingly, Mr. Gilbert arranged with their suppliers to place the coils in the box cars or on trucks with the flat side resting on the lift truck platforms. They are still received and handled during unloading and storage in unit loads of two coils per platform. However, when the space is desired, the coils are lifted by means of another labor saving grab of another type and piled four high as indicated in

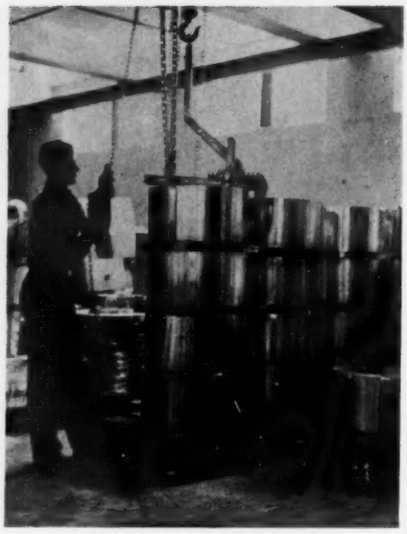


Fig. 2—This special grab grips coils lying flat and permits placing them four high as shown thus increasing amount of stock which can be stored in a given area

Fig. 2. This method of storing helps prevent scratching of the steel and permits the material to be piled at any height without distorting coils.

When steel is desired by the manufacturing division, it must first be slit as it is required in dimensions much different from those in which

(*Please turn to Page* 66)

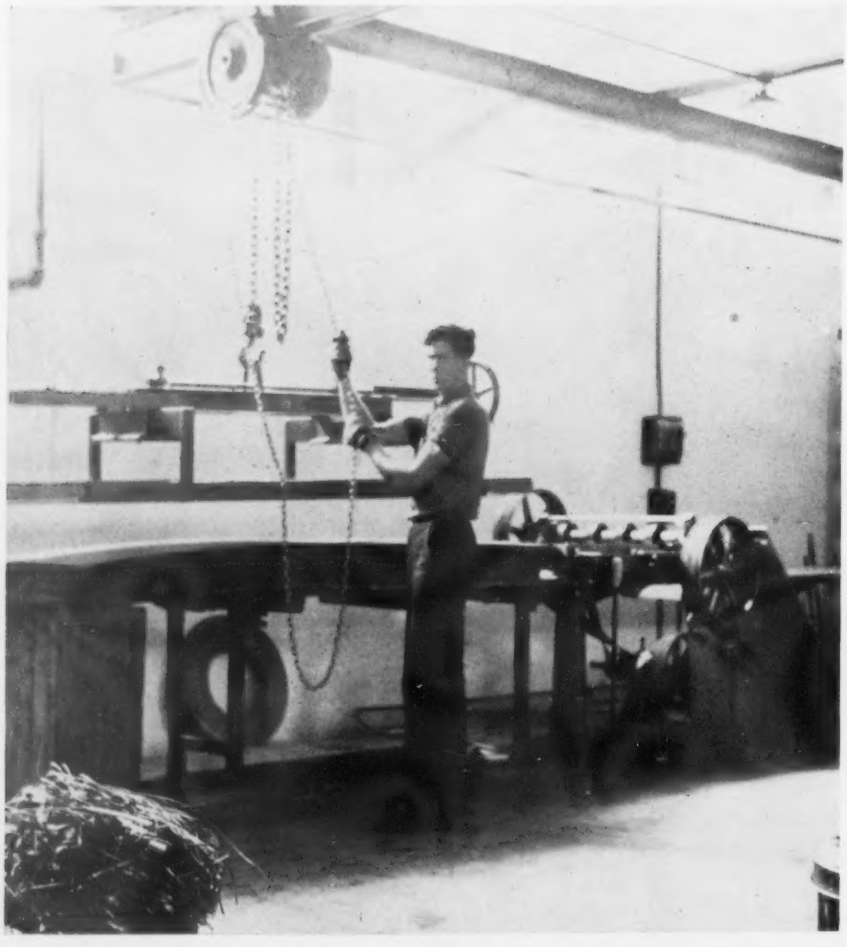


Fig. 3—Showing how grab is used to place packs of sheets in position on table for feeding into slitter

Boron Determination Method Is Available

■ Increased use of boron, both as a scavanger and as an alloying constituent, has made desirable an accurate method for its determination when present in small amounts, according to the national bureau of standards, Washington.

A method for this determination has been developed by John L. Hague and Harry A. Bright of the bureau of chemistry division. Procedure calls for solution of the sample by hydrochloric acid followed by oxidation with hydrogen peroxide, distillation of methyl borate (Chapin's methods), and titration of boric acid with sodium hydroxide in the presence of mannite.

Selenium and tellurium do not interfere, but germanium, a very minor constituent, rarely present in ferrous alloys, causes small plus errors. A special procedure for examining any acid insoluble residue for boron has been worked out.

New Process for Coating Metals with Tin

■ There has been developed in England a new process for coating brass, copper, iron, zinc and other metals with tin. This method, known as "stannising," is described in technical publication A.76 of the International Tin Research and Development council, London, which free copies may be obtained from council headquarters, 149 Broadway, New York.

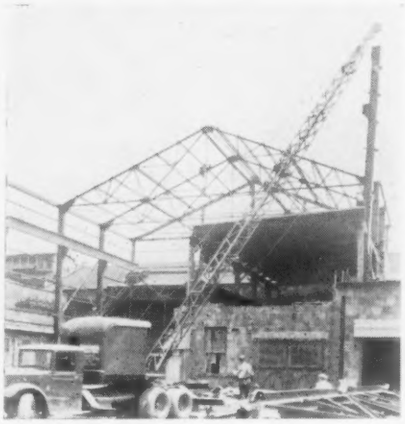
Applicable to fabricated articles of complicated shape, method consists in suspending articles in an atmosphere of hydrogen and vapor of stannous chloride at a temperature of 500-600 degrees Cent. In contact with metal surface, hydrogen reduces stannous chloride to tin which then alloys with the article.

Shows Drafting Symbols

■ To eliminate difficulty often encountered by engineers in finding a particular drafting symbol for some form of construction, Frederick Post Co., Chicago, has compiled on a single chart 249 symbols, which were selected, with cooperation of architectural and engineering groups, from more than twice that number. Copies of this chart can be obtained by addressing the above company.

NEW METAL PRODUCTS

■ Designed for steel erection and rigging, a heavy duty 13-ton capacity truck-mounted crane has been

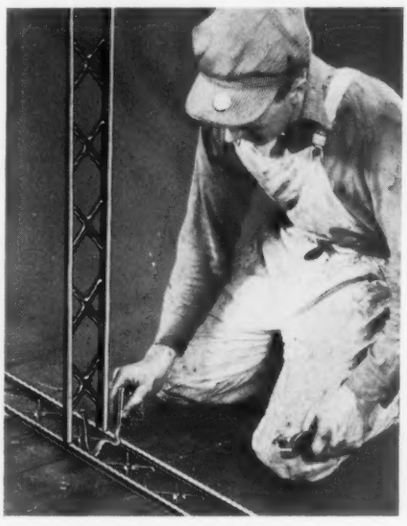


added to the line of Thew Shovel Co., Lorain, O.

Machine has a capacity of 26,000 pounds at a 10-foot radius in all directions with outrigger set, and without outriggers will handle 23,300 pounds over back and 21,700 pounds over side at 10-foot radius. All-welded boom has a basic length of 25 feet and consists of two 12½-foot sections. Center sections are available to extend boom to a maximum length of 80 feet, and tip extensions will increase length up to 110 feet. Crane is illustrated with 75-foot boom. Lacing of the boom is formed of a single continuous bent angle running full length of each section, instead of being formed of lattice bars.

■ Announcement is made by Milcor Steel Co., Milwaukee, of a one-piece metal wall stud, which affords maximum strength, simplicity in erection and positive locking to floor and ceiling.

Stud has large, uniform openings and reinforced X-shaped members as well as an effective shoe and clip arrangement as its exclusive features. It offers fire-safety, earthquake resistance, insulating value, sound resistance, light weight and elimination of plaster cracks as attendant advantages.



■ A practical solution to the old problem of what to do with vacuum cleaner cords now comes to the market in the form of a self-reeling handle, the Cordomatic, a product of Vacuum Cleaner Corp. of America, Wissahickon avenue, Philadelphia.

This device, which operates on a coil principle similar to that used in measuring tapes, reels cord automatically into a metal container that is an integral part of cleaner

handle itself. A full length of cord is whisked into handle at the touch of a trigger in less than 3 seconds.

■ Piston rings which seal cylinder bore, seal ring groove, hold high compression, ease starting and stop dilution and contamination in compressors, pumps, gasoline and oil engines are announced by Wilkening Mfg. Co., Philadelphia.

Outstanding feature of rings, which are called Seal Cut, is a perfectly matched lap which prevents any leakage past ring at the cut, either down the cylinder bore or around the ring groove. Rings are shaped by heat in a patented process which insures equal distribution of radial pressure and provides a black iron-oxide coating.

■ Built to meet demand for an efficient portable drilling rig which could be moved and rigged up quickly, an all-steel drilling machine, with anti-friction bearings, free running reels, air-cooled brakes and a shockless spudder, has been introduced by Star Drilling Machine Co., Akron, O.

Machine has a capacity for drilling jobs up to 3500 feet. Its out-

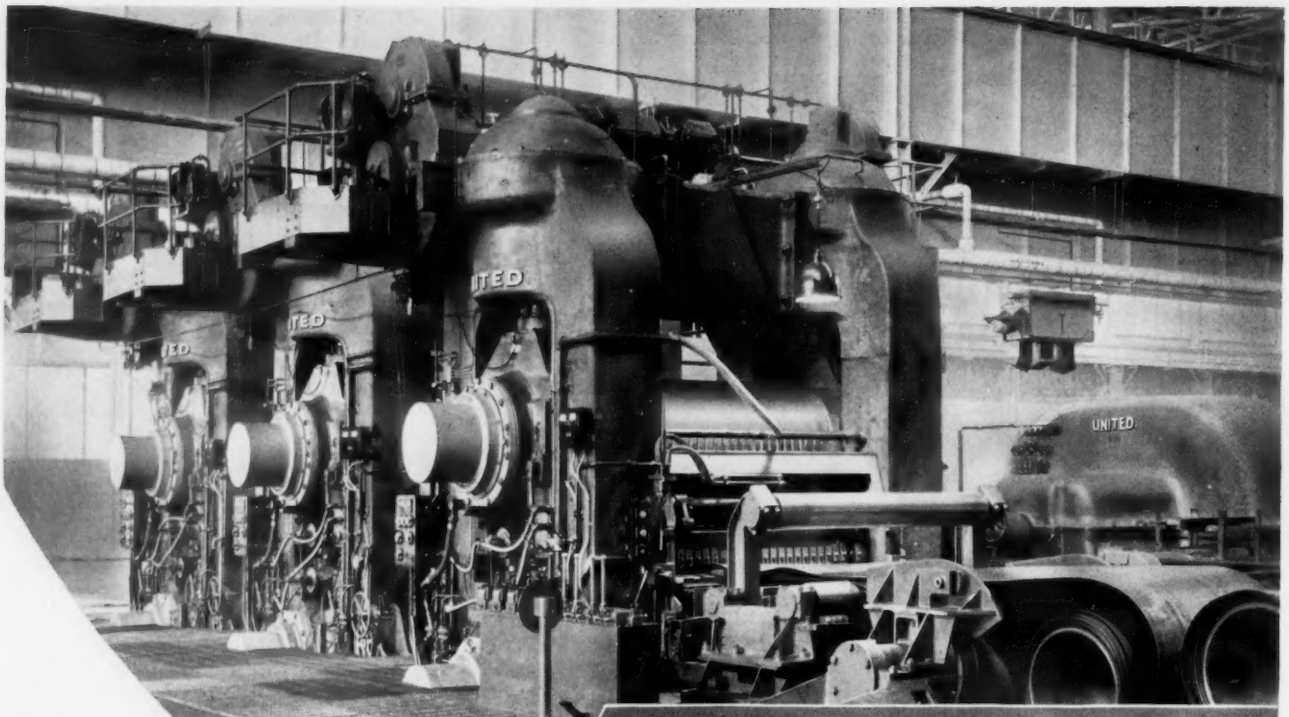
standing feature is a device built into the spudder which absorbs and reduces shock loads transmitted to machine by drilling line. This protects both line and machine, and permits smoother operation and longer service.

■ War on the prickly pear recently was halted in Texas because solution used to kill the growth was so corrosive that ordinary iron and steel containers could not be used.

After testing several materials, Texas Machine & Mfg. Co., Houston, Tex., began manufacturing all-welded, portable tanks of 18-gage Enduro stainless steel to contain the corrosive solution of arsenic pentoxide, sulphuric acid and water.

■ Because of its extremely corrosive nature, hot silver sulphate has always presented a difficult handling problem for the chemical industry. A corrosion resisting shovel, made by Wood Shovel & Tool Co., Piqua, O., of Enduro stainless steel, is designed to offset this condition.

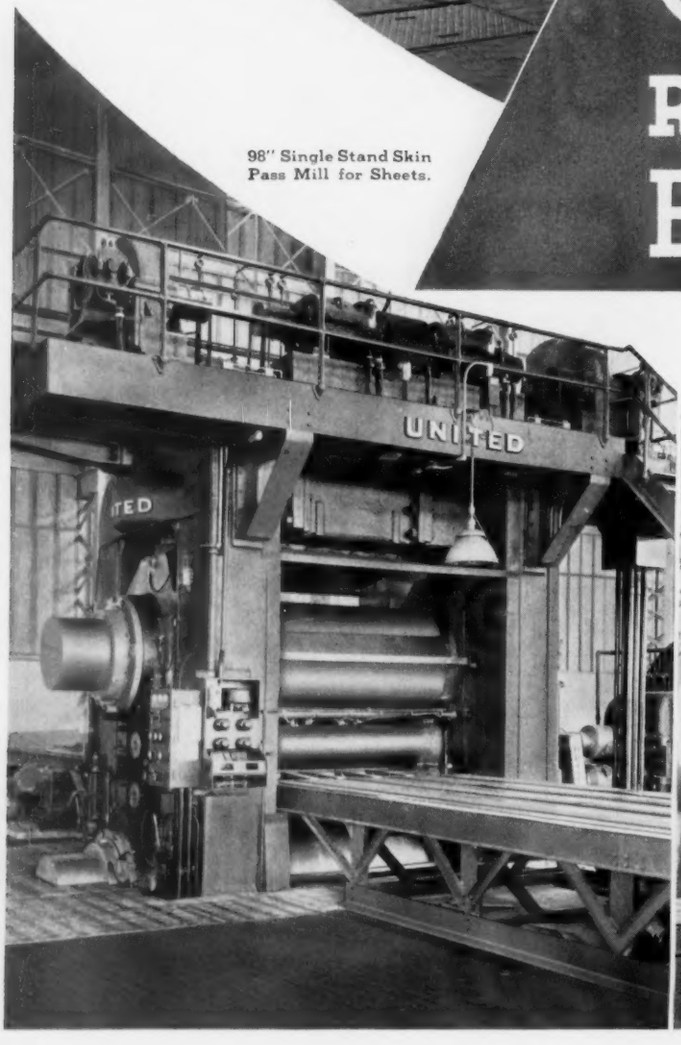
This is only one of hundreds of applications of stainless steel found in the field of chemistry—drums, digesters, evaporators, filter screens, pipe lines, retorts, stills, tank cars, valves, vats and many others.



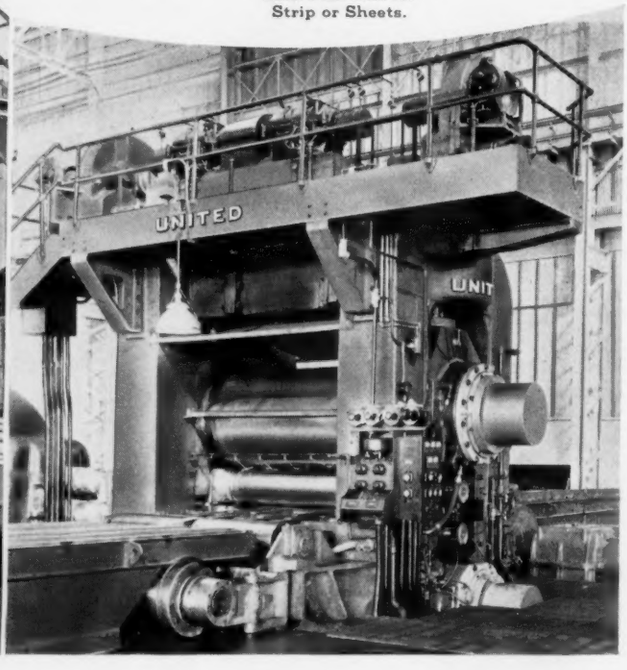
98" 3-Stand Tandem Cold Mill with Automatic Uncoiler.

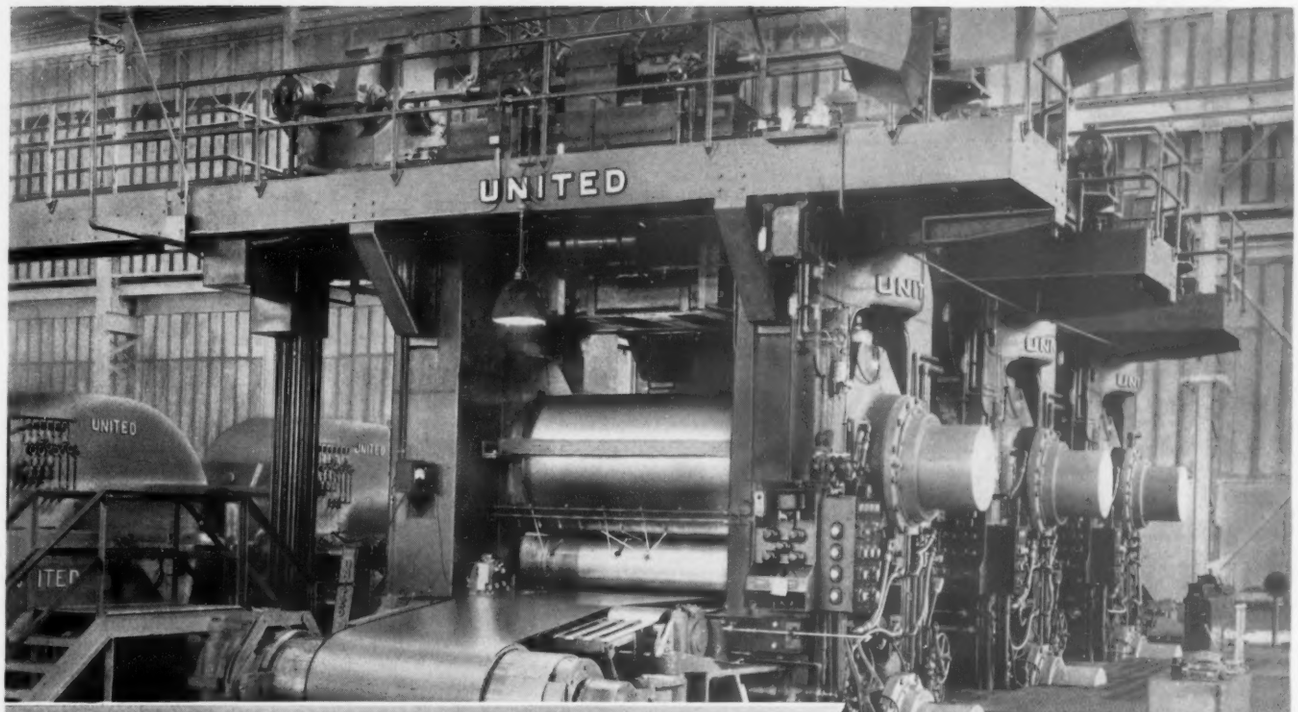
Complete ROLLING MILL EQUIPMENT

98" Single Stand Skin Pass Mill for Sheets.



Combination Skin Pass Mill for Strip or Sheets.





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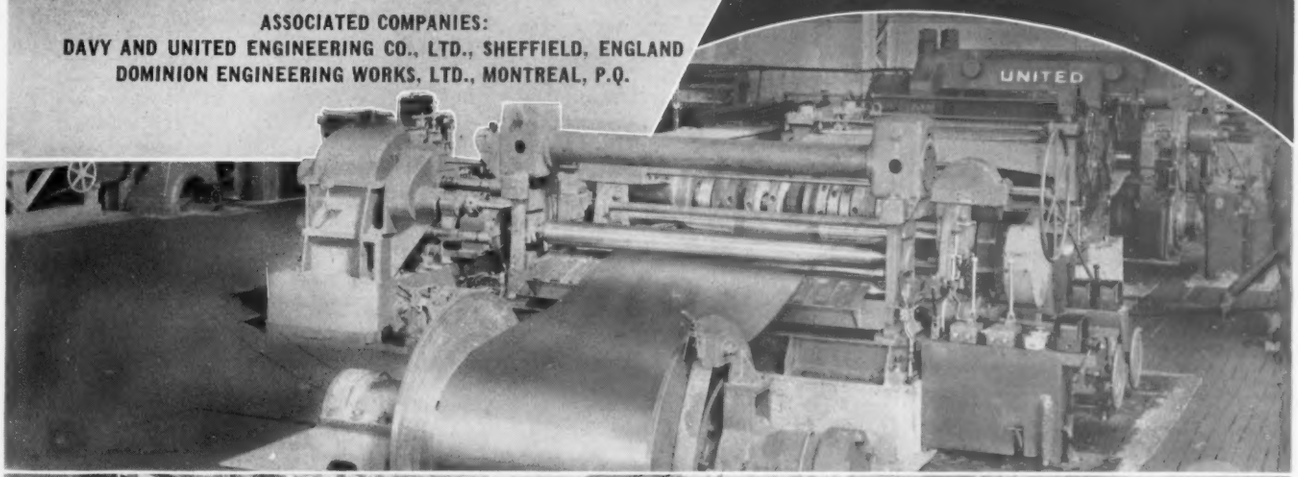
98" 3-Stand Tandem Cold Mill Delivery End.



Drum Type Flying Shear Line.

Rotary Slitting and Side Trimming Line.

Stainless Equipment

Being unaffected by product and easily cleaned, stainless steel appears to fill major requirements of food industries. Fabrication by welding makes possible notable cost reductions

By O. W. MOJONNIER
Factory Superintendent
Mojonnier Bros. Co.,
Chicago

■ TWO IMPORTANT factors enter into manufacture of coolers, pasteurizers, storage tanks, bottling units and other equipment used in dairies, breweries and soft drink bottling plants.

1. Metal surfaces in contact with milk, beer or soft drinks must be absolutely unaffected by staining or corrosive action of acids in liquid handled. The 18-8 stainless steels are especially suitable.

2. All surfaces in contact with these liquids must be accessible by partial or entire disassembly for thorough cleaning without crevices or rough spots on the surface which might retain even a particle of the food solids. Design and construction of the equipment must be carried out with this requirement in mind.

When stainless steel was first used for this work, many parts of intricate shape and design were cast. Surfaces in contact with food, however, had to be ground through the rough skin and polished, which added considerably to their cost. Finishing inside surfaces was extremely difficult. Outside exposed surfaces have to be finished for appearance in any case.

About eight years ago this company began experimenting with forming and welding many of these parts from stainless steel sheets, plates, tubing, fittings and forgings. Today, very few castings are used.

Fig. 2—Welding stainless steel pipe fittings to cooler sections

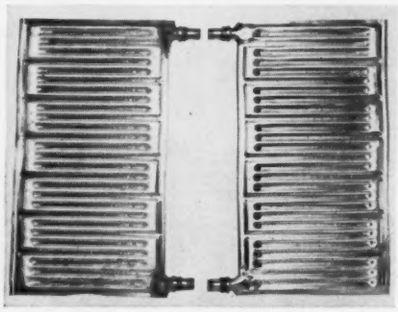


Fig. 3—Cooler sections are made from die-formed halves, stitchwelded together

Fig. 1—This bottling head is the most complicated part made here. It is made of stainless steel pipe, sheets and forgings. Photos courtesy Lincoln Electric Co., Cleveland

Now practically no surfaces need be coated with tin as stainless metals are used extensively wherever necessary. An important advantage of using finished stainless sheets, etc., has been the elimination of most of the extra finishing expense other than grinding and smoothing metal deposited in the weld and polishing external surfaces.

In most cases the newer welded design also is lower in cost. In all cases welded equipment finishes better and more easily and is lighter. Finish and appearance are of special importance in food products plants.

The most intricate units made by welding here are milk bottle filling heads for the bottling machines

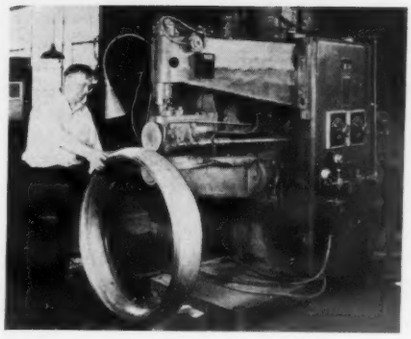


Fig. 4—Semiautomatic stitchwelder, using synotron tube control. Photo courtesy Thomson - Gibb Electric Welding Co., Lynn, Mass.

shown in Fig. 1. The head, turned on its side in the illustration, is built up of 18-8 stainless sheets, tubing and forgings.

Milk flows down through the tubes into the bottles which are set under the individual filling distributors. Filling is vacuum controlled, as the head rotates. Joints must be free of leaks, crevices and open seams on the inside for sanitary reasons and without rough projecting metal on the outside for sake of appearance.

Fig. 5—Ammonia inlet for milk cooler sections, welded from stainless sections

In welding stainless tubing together, or in welding tubing to forgings, the inside is backed up with copper tubing to assure a full deposit to bottom of joint and a smooth even surface on the inside. Joint is inspected and polished on the inside and then ground smooth and polished on the outside. In welding tubing to forgings, the arc is carried on the forging to compensate for uneven thickness of metal.

Importance of design in simplification of construction and provision for ease of cleaning is well illustrated in the cooler, Figs. 2 and 3. Many earlier types of coolers consisted of pipe coils with lengths of pipe bolted together at flanged ends and with detachable U-fittings. Liquid to be cooled circulated through the coils which were surrounded by brine or other cooling medium. Pipes were cleaned daily by disassembling coil, washing out each length of pipe and fitting, and then reassembling.

Fig. 7—Intersections of V-grooves are notched out, formed separately and welded in

With coolers in Figs. 2 and 3, circulating coolant is on the inside of the coils and milk or other liquid trickles down over the outside as the coil sets in a vertical position. Sections are built up of two 18-gage, 18-8 stainless stampings which when welded together provide an interior coil for circulating the coolant. Pipe connections of stainless steel are arc welded on.

Fig. 8—Vacuum pan condenser, formed and welded of mild steel plate, pipe and bars

The two stampings are stitch welded together on the machine shown in Fig. 4, which in this illustration is welding a special cream cooling coil. On a flat coil the weld is made around the edges and between each coil with 1500 pounds hydraulic pressure exerted on the disk welding heads. Stitches are ⅛-inch apart with spacing and timing automatically controlled by a synotron tube.

Crevice between the two halves at outer edges of the sections is closed by running a light arc weld around the circumference. Last operation is to smooth weld deposits and polish all over. Fig. 3 shows a section at left just after welding. Section at right has all irregularities and metal deposits ground smooth and polished.

These coolers provide 22 feet of single-pass coil with a ¾-inch opening in each 15 x 24-inch section. Welded web between coils acts as a fin and provides greater cooling surface than would the coils alone. An important advantage is that the outside is easily cleaned. Only the

Fig. 6—V-groove reinforcements are pressed into sides and edges of cooler cover

Fig. 9—Mild steel bars are coiled to guide coolant in helical path

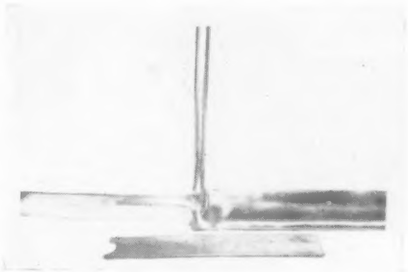


Fig. 10—Mixing propellor made by welding stainless steel and two formed blades

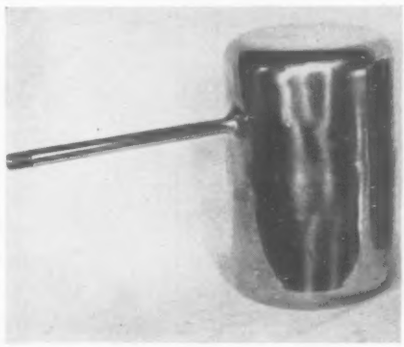


Fig. 11—Float consists of a bar butt-welded to cylinder formed by welding spun cups together

METAL SHOW ISSUE ★ OCT. 10 1938

Information

GENERAL

The Twentieth National Metal Congress and Exposition, sponsored by the American Society for Metals, will be held at the Convention Hall, Detroit, October 17-21. The following technical societies, will participate:

American Society for Metals
American Welding Society
Iron & Steel Division, A.I.M.E.
Institute of Metals Division, A.I.M.E.
Machine Shop Practice Division, A.S.M.E.
Wire Association

Working in closest harmony with the American Society for Metals, STEEL is doing everything possible to insure the success of this Twentieth National Metal Congress and Exposition. The October 10 issue will carry the complete program, list of exhibitors and other pre-convention news.

Plus values will be found in brief articles written by men known and respected throughout the industry. In addition, we plan a sizeable pictorial section depicting the progress and achievements of the past year.

This issue definitely supplements the Metal Congress and will serve to bring the Exposition to those who cannot attend.

The usual card rates will apply for those wishing representation in the October 10 issue but not in the insert section.

PUBLICATION

A feature of the October 10 issue of STEEL will be a combined editorial and advertising section devoted to the same interests as the National Metal Congress.

Those advertisers desirous of appealing to these same interests will find unusual value in being properly represented in the special section of this issue.

Additional advertising values are afforded by the articles on heat treatment, welding and metals written by various authorities and by the pictorial section which graphically portrays progress made in the last year. Advertisements in this section will be placed effectively before the right people.

This interest value is not confined to the readers of STEEL who attend the Exposition, but extends in even larger measure to those similarly interested who do not attend, thereby depending more largely upon STEEL to bring the Exposition to them.

COLOR . . . Two colors will be used—red and black—printed on India tint coated stock.

RATE . . . including color and insert position—$175 a page for regular advertisers—$200 per page one time.

BLEED-OFF . . .

$25.00 additional for one page.
$40.00 additional for two page spread.
(Bleed-off plates, 8¾ x 11⅞ inches.)

CLOSING DATES . . . Final forms will close Thursday, September 29. Reservation and copy requiring composition should be in Cleveland not later than Wednesday, September 14.

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coolant is in contact with the inside of the coils.

Originally, the ammonia inlet connection to cooler section consisted of a threaded casting which occasionally gave trouble due to leakage. This has been supplanted by the connection shown in Fig. 5, which is made up of stainless steel pipe fittings welded together in a fixture. Finished unit is ground and polished.

The stainless steel cover or case, Figs. 6 and 7, must be removable for cleaning on the inside and also to permit access for cleaning the cooling sections.

Sides of these covers, if formed flat, would require reinforcements which would increase the weight and difficulty of cleaning. Otherwise the sides would be wavy or too limber to handle and soon bend so as to detract from the appearance of the finished cover.

Fig. 12—Another float made from sheet stainless steel, formed and welded

To overcome this difficulty, V-ribs, Figs. 6 and 7, are formed in the cover. These ribs extend vertically down the ends and are spaced on the sides and horizontally near the top and bottom border of the panels. With the press-brake forming equipment available it is not possible to form the intersections and corners of the V-ribs. Therefore, sections at these points are notched out in the flat sheet, die-formed separately, trimmed to the correct width and welded back into the formed side.

Fig. 6 shows a finished side panel and Fig. 7 the small formed sections which are welded into the side panel. Narrow strips trimmed off these small parts to compensate for shortening of side because of the V-rib are the only waste in forming the panel. Welds are ground down smooth and both sides polished.

The press brake, the only forming tool in the shop, is provided with a number of simple dies for forming the small shaped parts required in relatively small quantities. The larger and more complicated side halves for the cooler sections, Figs. 2 and 3, are die

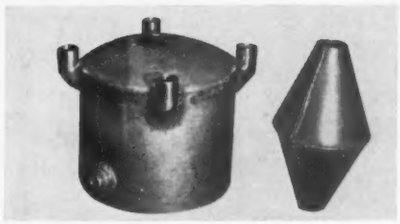


Fig. 13—Vacuum bottom pan, left, is welded from stainless plate and fittings. Exhaust condenser, right, is made from formed mild steel sheets

formed in an outside factory.

A good example of special forming is the conical top on the vacuum pan condenser, Fig. 8, which is constructed largely of 3/16-inch mild steel plate, as it is not in contact with food products. Top is formed of flat plate in a special die and welded together. As the condenser must be removable, top is bolted on.

In some cases equipment is made of both mild and stainless steel. The inside tank, Fig. 9, which holds the temperature after pasteurizing, is an example. Ribs of light mild steel bars are rolled, coiled helically around and welded at intermittent points to the outside of the stainless steel tank. An outside copper bearing or stainless steel shell is drawn tightly around the ribs and seam welded. Refrigerant circulates around the tank, following a spiral path between the ribs.

Fig. 10 indicates how pipe and two press-brake formed parts have replaced a casting by welding at considerable saving in finishing expense. The casting for this pasteurizer mixing propeller had to be ground and finished all over while the stainless steel parts are ground at welded points and polished all over.

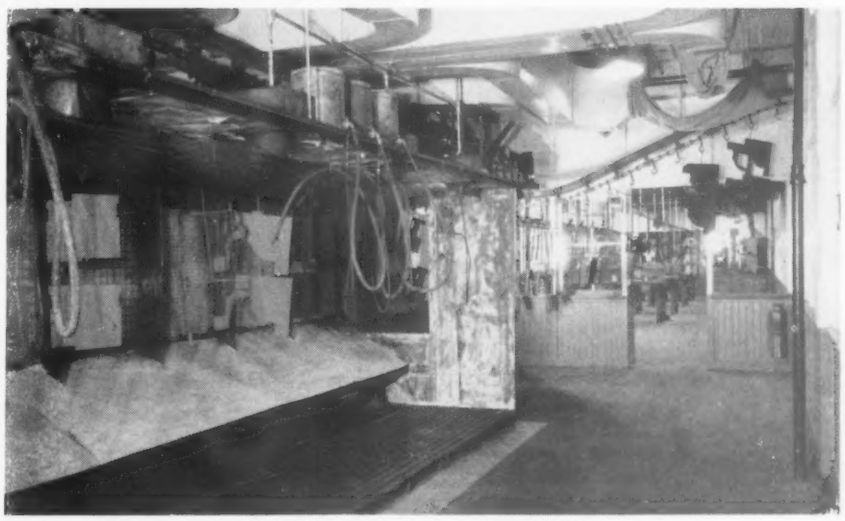
Figs. 11, 12 and 13 show other parts, with one exception, built from stainless steel by welding. Stainless steel is received in sheets most of which have a pickle finish on the side in contact with the food product so it will take a good polish. The other side is No. 4 mill finish for appearance.

Polished surfaces of stainless steel sheets are received coated with paper which is retained through processing to protect the surface from scratching. Workmen are carefully trained to protect the surface against scratches.

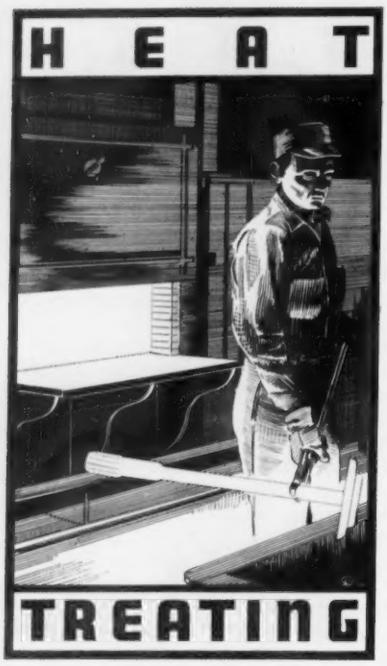
Each welding operator is provided with his individual arc welding unit. Size and type of rod is specified for each type of weld according to tests and makers' recommendations.

All welding operators have received their training in the shop. No man is permitted to weld on stainless steel until he has demonstrated his ability by two year's experience at welding mild steel. In his training, the operator begins on simple welds and gradually works up to more complicated parts. Work of all operators is tested frequently and carefully supervised all of the time.

Conveyor Passes Through Booth



■ **This setup is employed at National Cash Register Co., Dayton, O., to increase production in finishing cash register cases. Work passes through spray booth suspended from a traveling chain conveyor. Baffles prevent spray from depositing excess paint on adjacent cases. Drain board catches drippings. Guard plates shield conveyor chain from paint spray. Exhaust ducts maintain clean air supply for workmen. Paint containers are overhead so do not interfere with movement of workers in booth**



Quantity Production

Automatically controlled and conveyorized carburizing, hardening and drawing furnaces of continuous type produce lower costs per unit and increase amount of work handled

By **WALTER G. BAIN**
Superintendent
Heat Treating Department
Allis-Chalmers Mfg. Co.
Springfield, Ill.

■ INCREASED production in the Springfield, Ill., tractor works of Allis-Chalmers Mfg. Co., recently called for installation of continuous heat-treating furnaces and adequate handling equipment. A few years ago, when production was low, flexibility was needed to handle wide variety of parts. However, with increased production demands, automatic and special machinery for individual jobs is replacing the interchangeable units. Combined with adequate conveyor equipment, these make for lower cost per finished unit.

Old carburizing equipment has been replaced by new continuous carburizing units which operate on a 15-hour cycle and produce 450 net pounds of work per hour. The overall cost per net pound of carburized material shows a considerable saving over previous methods. Savings in compound handling, floor space and maintenance are additional advantages. These units, Figs. 1 and 2, built by Surface Combustion Corp., Toledo, O., are believed to be largest of their kind. Overall length is in excess of 55 feet.

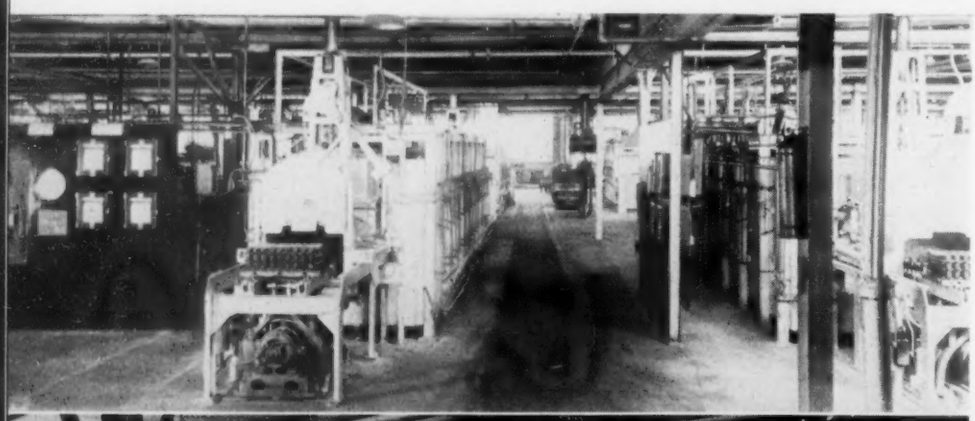
The cast alloy muffle, approximately 44 feet in length inside which the work is carburized, protects the atmosphere from infiltration of oxygen. Material to be carburized is loaded manually on high nickle and chromium alloy trays and mechanically pushed through the muffle where it is exposed to action of carburizing gases. Trays are discharged at opposite end, after passing through a cooling zone, and are unloaded manually into skids at a temperature of less than 200 degrees Fahr.

Carburizes Track Pins

Most of the material carburized consists of track pins and bushings and various shafts for crawler track and drive mechanism of the tractor. These items are made of SAE X-1020 steel. However, a considerable amount of low carbon alloy steel is carburized with identical results. A case depth of about 1/16-inch is maintained for all this work.

Automatic temperature control is effected in each of four zones in the furnace by use of latest type recording pyrometers. Automatic records are taken on the carburizing gas flow and pressure in the muffle. The control and recording instrument panel is shown in Fig. 1. Thus an accurate, permanent record is kept on furnace operation for reference in time of trouble or in checking normal operation.

Once started, furnaces are operated continuously and are shut down only because of lack of ma-



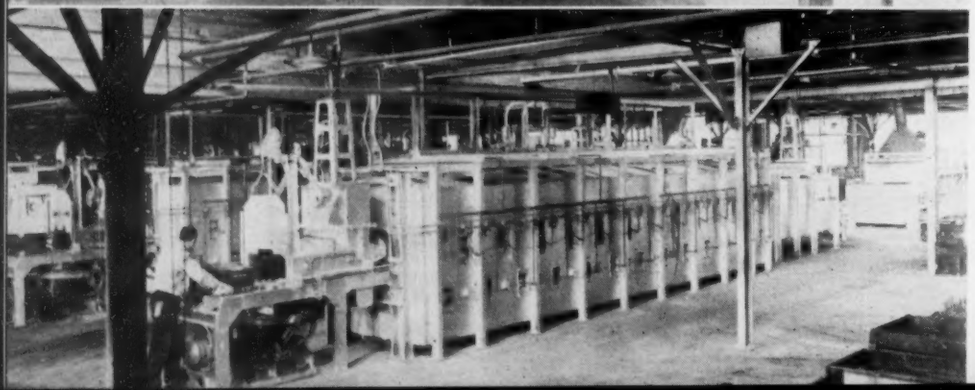
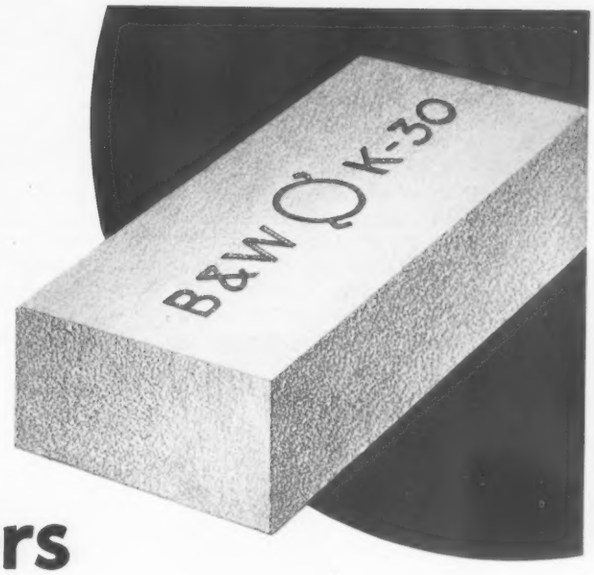


Fig. 1 (top)—Two continuous carburizers, one on each side of aisle. Control and recording equipment at left. Fig. 2 (bottom)—Side view of carburizing furnace with reheat hardening furnace at extreme right, second carburizing furnace and rotary hardening furnace at left

B & W
Insulating Firebrick
for
Light Weight
Soaking Pit Covers



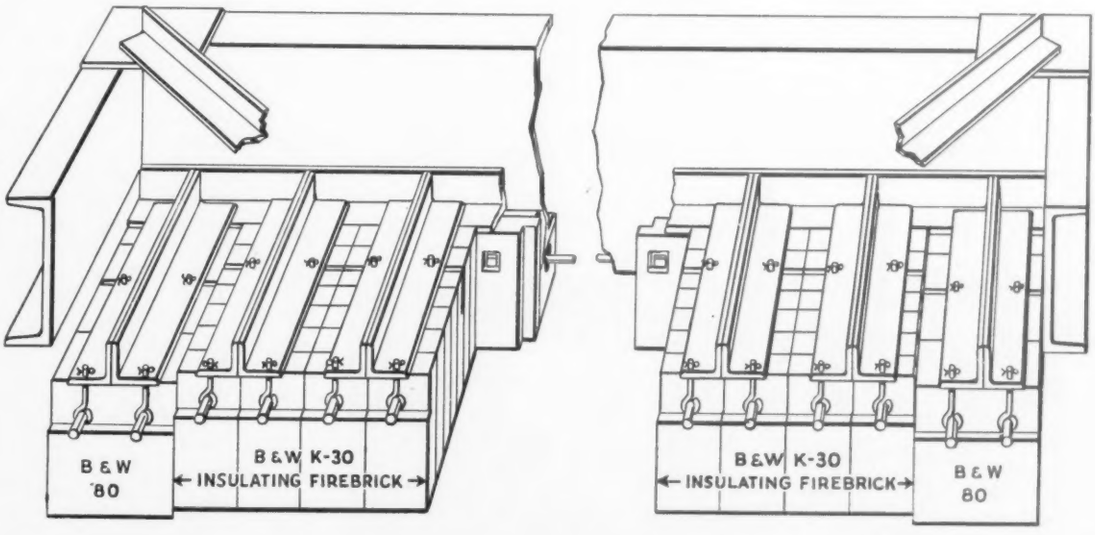
Light weight of the cover structure means less power required and greater ease in handling.

Fuel Savings—assured by the low heat storage capacity and low thermal conductivity of B & W Insulating Firebrick.

Longer Life—B & W Insulating Firebrick have outlasted heavy firebrick.

B&W 80 Firebrick, B&W Junior Firebrick and B&W Insulating Firebrick have a wide range of applications in steel plants. To mention a few:

Annealing Covers and Furnaces, Billet Heating Furnaces,
Slab Heating Furnaces, Merchant Mill Furnaces, etc.



THE BABCOCK & WILCOX COMPANY . . . Refractories Division . . . 19 Rector Street, New York, N. Y.

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BABCOCK & WILCOX

terial over a long period or in event of a serious breakdown. When material is slow in coming from the shop or production is held up temporarily for some reason, furnace is idled above a red heat until new material is at hand. This idling cost is small and more than makes up for the loss that would be sustained by completely shutting down and then reheating.

Heating carburized parts for hardening is done in continuous belt-type furnaces rated 1200 pounds per hour. Continuous operation of these furnaces on a 5-day week handles all the work in connection with double quenching output of 7-day week continuous operation of the carburizers.

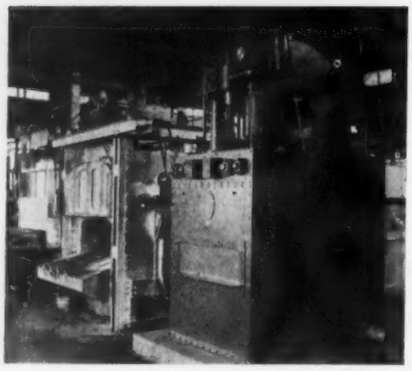


Fig. 3—Centrifugal quenching machine, foreground, hot-forms drive sprockets and quenches teeth leaving hub machinable. Discharge end of continuous hardening furnace at left

Material is manually charged on a link belt and is carried through the furnace at a rate adjusted by operator to suit type of material. Quenching is accomplished automatically at end of soaking zone when work falls through a chute into tank below. Elevating conveyors carry the quenched work from the tank and discharge it into steel box skids on the floor.

By controlling carburizing gas in carburizer muffle and atmosphere in hardening furnace, scale is held to a minimum so the hardened pins and bushings need no sandblasting or grinding. Heating and soaking zones are controlled automatically in all hardening furnaces. Recorder charts keep permanent records of discharge temperatures of all work.

Track links present another high production problem in the manufacture of track-type tractors. Forged of a carefully selected SAE 1045 steel, these links must be hardened differentially to secure proper distribution of hardness and toughness so necessary to give long life to these parts.

Continuous rotary-hearth furnaces are used in heating links so proper heating and soaking time may be easily and efficiently controlled. Hot links are discharged manually and placed in timed quenching jigs which make bottom side of rail hard and wear resistant while the top side is tough and ductile enough to withstand the heavy shocks to which it is subjected.

Before becoming completely cold, links are placed on conveyors and charged into draw furnaces to relieve strains induced by quenching and to temper to proper and uniform hardness. Each link receives a final inspection for hardness and bore size before being sent to assembly line.

Truck wheels and track rollers, SAE 1050, also are treated in the rotary furnace and differentially hardened. Here the quench cycle is timed so face of wheel is hardened while bore is softer but sufficiently tough to absorb the shock of carrying tractor over all types of terrain. No tempering is necessary here since enough heat is left in hub to furnish the proper heat flow back through the hardened section and to do the same job as a furnace.

New furnace equipment has been installed to handle heat treating of track shoes, axle shafts and drive sprockets. These are heavier parts, weighing from 30 to 110 pounds each, and furnaces of rugged construction are needed. Hardening furnace is a 3-zone control type unit with a continuous chain-belt hearth. Three alloy chains make up the hearth with individual link assemblies weighing from 10 to 12 pounds each. Individual air cylinders take up expansion in each chain as furnace comes up to heat.

In loading, operator uses air or chain hoists to place work on furnace charge table. Hot work is discharged on a sloping chute so it can be manipulated easily by the quenching operator. Track shoes and axle shafts are time-quenched in water and loaded into the adjacent draw furnace at a temperature of 300 to 500 degrees Fahr. Forged drive sprockets are quenched in a newly developed centrifugal quenching machine, Fig. 3, which hot-forms the piece and automatically times the quench so only the teeth are hardened.

Equipment Is Replaced

All draw furnace equipment has been replaced in the last two years by new type recirculating hot air draw furnaces, Fig. 4. In this type of furnace, air is heated in a chamber outside the furnace and blown through stainless steel ducts into the furnace itself at extremely high velocities. Hot air passes over the work, giving up its heat, and is immediately drawn back into the heating chamber. Here the air is reheated to the proper temperature and then recirculated back into the furnace when the cycle is repeated.

High efficiency is attained by this process as well as absolute uniformity in finished hardness. Formerly only surface of the material exposed to the radiation was given the full draw but in these new furnaces circulating air contacts all surfaces equally.

The two draw furnaces for the track links are equipped with chain-grate hearths of malleable iron links which discharge into elevating conveyors driven from a sprocket on the hearth driveshaft. These conveyors drop links into skids and thus links are not handled manually from the time of quench until final inspection.

Draw furnace for shoes and shafts has a 1500-pounds-per-hour capacity and is rated for temperatures up to 1200 degrees Fahr. The continuous hearth is made up of alloy plates bolted to chains.

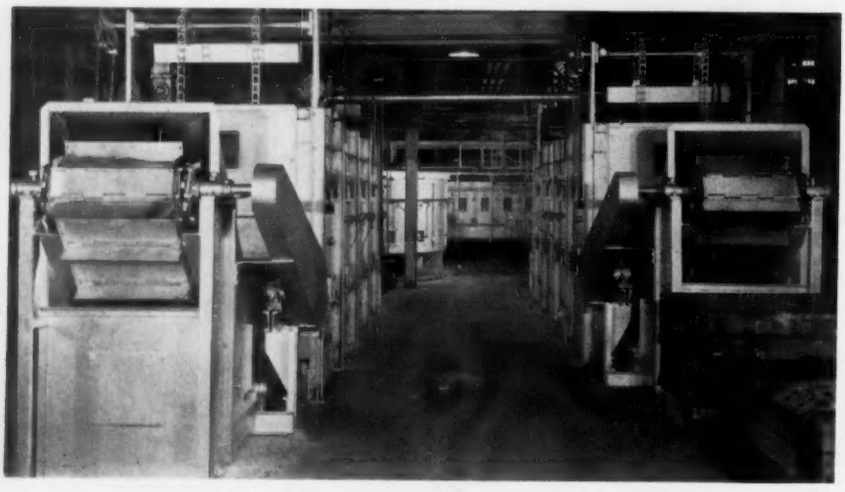
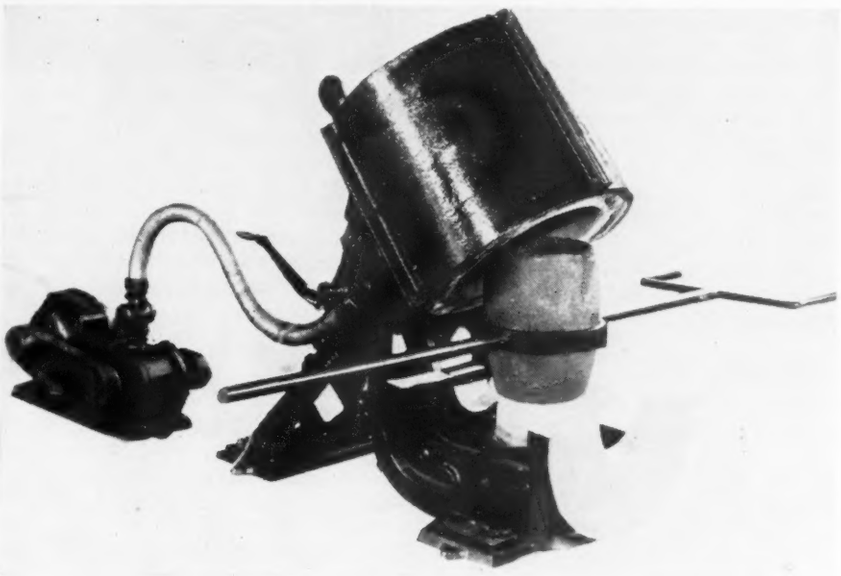


Fig. 4—Discharge ends of two recirculating hot-air continuous draw furnaces with elevating conveyors for loading work into box skids

Up-Side-Down Furnace Has Many Advantages

■ A NEW GAS-FIRED, cruicible-type, brass-melting furnace materially reduces labor involved in pouring. This novel furnace eliminates the necessity for taking hot crucible of molten metal from the furnace. The furnace which obviates this step has been developed by Osborn Bronze Works, Clarksburg, W. Va.

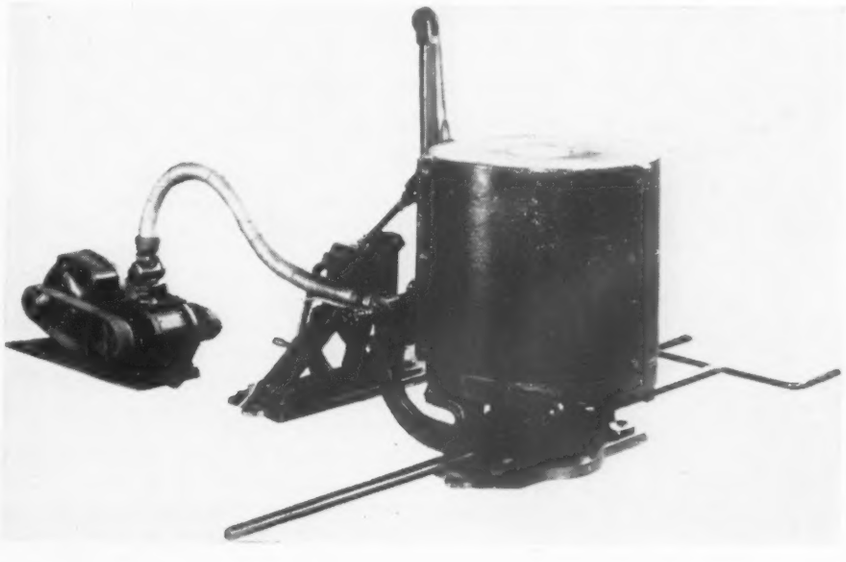


To remove crucible, furnace is tilted back and two halves of hearth tilted back out of way. Quicker heat and less fuel are other advantages

Principle involved in this gas furnace is simply the inversion of the old type furnace with the top forming a sort of hearth. Furnace is held in a frame supported from the base and is lifted up and tipped back from the hot crucible by a hand lever. The circular base, ordinarily the top, fits around pedestal on which the crucible stands. This base is split and arranged so two halves turn outward and assume a vertical position at the same time the furnace is lifted. This is to allow free movement of the shank which is laid in place around the pedestal before the crucible is put on.

To remove crucible, only two motions are necessary; first, a pull of the lever removes the furnace; second, a lift of the shank and the crucible is on its way to the pouring floor. This contrasts with ordinary procedure which includes: Remove top, pull hoist into position, lower tongs, adjust tongs about crucible, raise crucible out of furnace, lift shank about crucible and finally disengage tongs and pull out of way.

The new furnace saves time in getting hot metal to molds. With furnace in up-side-down position, less heat escapes during charging and removal of crucibles. Therefore the melting periods are much shorter. There is some saving in amount of gas fuel consumed. The hazard incident to use of tongs is eliminated. Makers claim that with gas furnace large enough for Nos. 60 and 70 crucibles, averaging melting time on a charge of high bronze is 40 minutes with maximum gas consumption of 600 cubic feet of natural gas per hour.



Novel furnace of crucible type eliminates use of hoist or tongs as furnace is in up-side-down position over crucible. Photos courtesy American Gas Association

Electrode Has Higher Chromium-Nickel Ratio

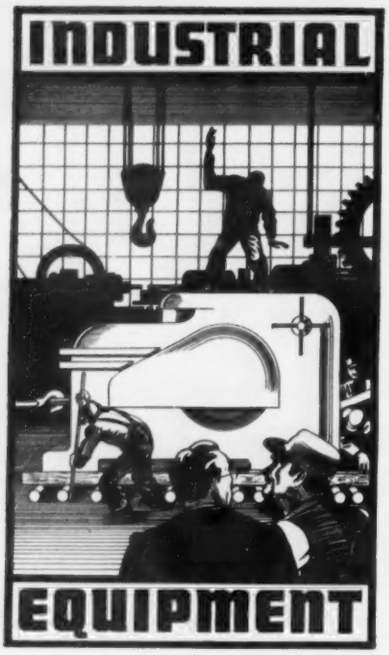
■ An electrode for welding chromium-nickel stainless steels has been added to the line of Harnischfeger Corp., 4400 West National avenue, Milwaukee.

Base metal of this electrode contains 19 per cent chromium and 9 per cent nickel, a higher content of both elements than is found in the usual 18-8 type of stainless steel. This prevents nickel and chromium content of weld from dropping below analysis of parent metal. Carbon content of base wire is below 0.08 per cent to insure high resistance to corrosion. Columbium is added to prevent carbide precipitation, cause of inter-granular corrosion.

Dispenses Shim Stock

■ An ingenious container, facilitating storage and use of thin brass shim stock, has been introduced by laminated Shim Co., Long Island City, N. Y.

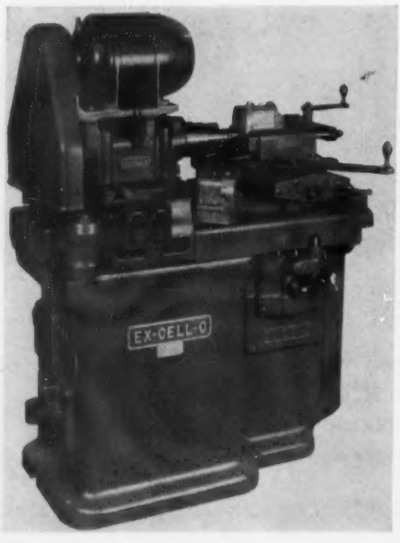
Packed within carton is an assortment of shim stock sizes most often needed, including four rolls 50 inches long, in 0.001, 0.002, 0.003 and 0.005-inch thicknesses. Shop or maintenance man simply pulls thin shim stock through carton slots and cuts it off as needed. Wrinkling and waste of stock are prevented.



Machines Aluminum Magneto Housing

■ Ex-Cell-O Corp., 1202 Oakman boulevard, Detroit, has placed on the market a 2-spindle precision boring unit for complete finish machining of a magneto housing, including aluminum and cast iron and steel laminations.

As shown in illustration, machine has a special hand-index fixture. Part is located on a rabbet flange and held by a cam-operated yoke clamp. Three diameters of the aluminum case first are bored simultaneously on one station, with spindle speed at 2000 revolutions per minute, removing 0.013 to 0.020-inch of stock, diameters ranging from 1⅜ to 2⅞ inches. End of case is faced at same time. Feed during boring is 0.0015-inch, with a 0.0005-inch feed for 1/32-inch depth of facing. Limits are held to plus 0.001-inch.



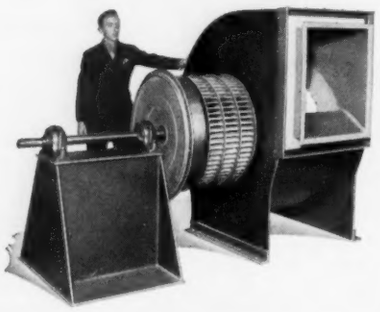
Following this operation, table carrying fixture is returned automatically and fixture is indexed to second position. Here cast iron and steel laminations are finish bored with carbide tools, using feed of 0.015-inch and spindle speed of 625 revolutions per minute.

Machine produces a finished case every 2 minutes.

Fans Operate in Hot Atmospheres

■ Industrial Gas Engineering Co., 201 East Ohio street, Chicago, has added to its line a series of heavy duty high temperature insulated fans designed for steel mill service and other applications where severe conditions are encountered.

Housings are double walled, the inner one of welded heat-resisting alloy plate and the outer one of steel plate with 5-inch insulation between. High strength alloy wheels are constructed for high speed operation in hot atmospheres. Heat transmission is eliminated by bearings being mounted on the welded steel base independent of fan housing.



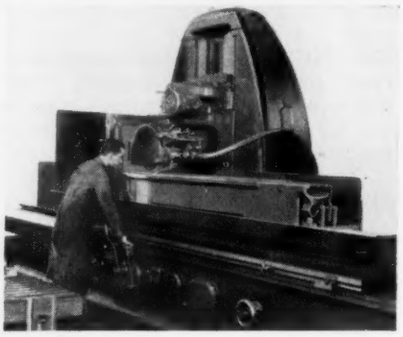
Three standard designs include class L, for temperatures up to 800 degrees Fahr., class M, suitable for service up to 1000 degrees Fahr., and Class H, for operating temperatures up to 1400 degrees Fahr. Capacities range from 1000 to 60,000 cubic feet per minute.

Fans can be supplied in either clockwise or counter-clockwise rotations and in any desired discharge positions. They are adaptable to direct motor drives, as wheels and housings are furnished in varying widths to handle any desired volume at standard motor speeds.

Grinds Hardened Ways

■ Mattison Machine Works, Rockford, Ill., has placed on the market a series of large, accurate grinders especially designed to produce smooth finishes on hardened V and flat-way surfaces.

Grinders are built with tables large enough to accommodate most jobs, and will handle heavy bases and long work to close tolerances. Wheel-truing device mounted on wheel slide permits truing both angles of wheel for grinding V-ways. Illustration shows precision surface grinder finishing way surfaces after flame-hardening process.



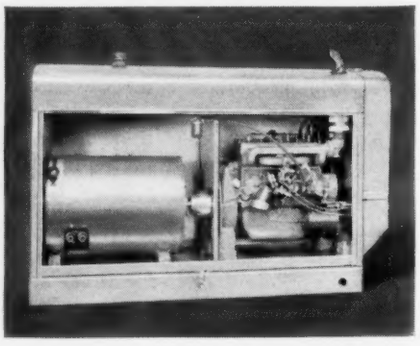
Metal-Clad Plywood Forms Match Plates

■ Haskelite Mfg. Corp., 208 West Washington street, Chicago, has developed a pattern board or match plate formed of metal-clad plywood panels, called Plymetl.

Because of its light weight, strength, stiffness and flatness, and its ability to resist wear and moisture, this material is said to be ideal for use as match plates. It can be supplied in any size or thickness required by the individual foundry. A ⅜-inch panel, with steel faces on both sides, has stiffness equivalent to ⅜-inch aluminum, yet weighs only half as much and costs substantially less.

Welder Has Wide Range

■ Harnischfeger Corp., 4400 West National avenue, Milwaukee, has added to its line a special 200-ampere engine driven welder, intended to meet demand for a low price unit with a somewhat wider operating



"If I were an ADVERTISING MANAGER"•

That's just one of the talks to be delivered anonymously by a masked speaker that will set every man thinking at the Annual Conference of National Industrial Advertisers Association in Cleveland, September 21-23. A second masked speaker will tell what he would do if he were a publication representative.

We're not going to tell you much here—just highlight the program enough to make your mouth water and your brain tingle.

T. M. Girdler, Chairman, Republic Steel Corporation, is scheduled for the opening address and when "T. M." talks he says something.

J. H. McGraw, Jr. will talk on "What I Would Do *Now* If I Were An Industrial Advertising Manager."

The new Publisher's Statement will receive full discussion.

Clinic sessions, so popular last year, will again cover a wide range of interesting subjects. Two half-day sessions instead of one.

A general conference session will cover such subjects as "Preparing the Plan", "How to Gather Usable Material", "Copy Technique", "How to Sell Management", "Co-ordinating Sales and Advertising" and "How and Why to Use an Industrial Agency."

Another session will deal with "Problems of the Small Advertiser", "Production Problems", "Public Relations"—and there are many others.

If I were an Advertising Manager, I certainly would start now to make plans to attend the 16th N. I. A. A. Conference even if I had to hitch-hike to Cleveland. And I would send in my advance registration now to—Ed. Bossart, Bailey Meter Company, Ivanhoe Road, Cleveland, Ohio.

IF I EMPLOYED AN ADVERTISING MANAGER—I would make certain that he attended this Conference, because changing times and markets demand a changed viewpoint—a new viewpoint that can be obtained only by hearing discussions by men whose experience is up-to-the-minute—right up to September 21st.

NATIONAL INDUSTRIAL ADVERTISERS ASSOCIATION

100 EAST OHIO STREET • CHICAGO, ILLINOIS

range than average 150-ampere welder.

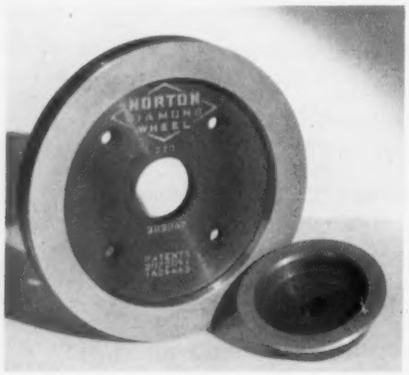
Machine has a 30-volt, 6-kilowatt generator with an intermittent welding range of 35 to 225 amperes. It is connected by flexible coupling to a 24-horsepower 4-cylinder Continental gasoline engine. Entire unit is mounted on a formed steel base and is equipped with a fully enclosing sheet metal canopy. Welder can be supplied with 2-wheel pneumatic-tired running gear.

This unit is designed to handle electrodes up to 7/32-inch under continuous manual operation.

Diamond Wheel Embodies New Principle

■ Norton Co., Worcester, Mass., has completed research on a type of diamond wheel which embodies use of a metallic bond.

Diamonds are actually imbedded in solid metal, the entire rim of the wheel being one homogeneous piece. This eliminates any joint be-



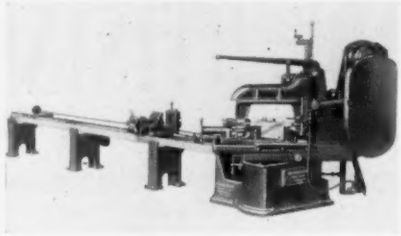
tween diamond impregnated grinding surface and balance of the rim that might cause premature breaking away of expensive abrasive material. Metal used is a special alloy that holds diamond particles securely yet allows enough wear to keep wheel free-cutting.

Swivels for Angular Cuts

■ Rasmussen Machine Co., 1 Main street, Racine, Wis., has placed on the market a metal sawing machine with a swiveling feature which permits angular cuts.

Entire machine swivels on its base, bringing saw into angular position in relation to work being cut. Vise is graduated up to 45 degrees, and is so mounted that it need not be moved when angles are cut. Spacer bar does not gage from end of stock. This eliminates jamming of pieces and minimizes blade breakage. Mounted on spacing bar is 24-inch steel scale, graduated in 1/32-inch steps.

Dial can be set to cut from 1 to 100 pieces. Machine stops automatically when desired number of pieces is cut. There is no gear box. Machine is V-belt driven through a 3-speed transmission. Feed arrangement has compensating type posi-



tive clutch, which has no ratchet or dogs. Saw frame is mounted on self-aligning bearings.

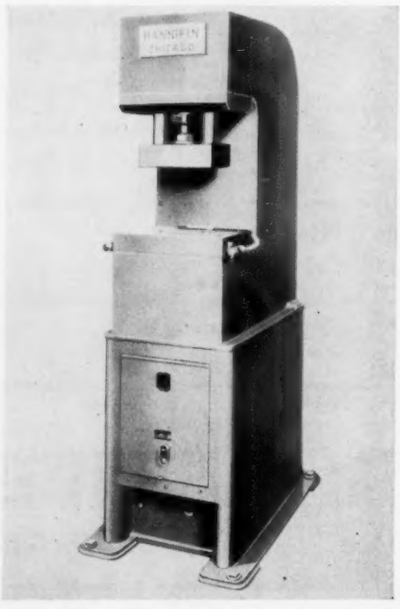
Machines are available in both manually operated and automatic models, and in 6 x 6-inch and 10 x 10-inch sizes.

Press Has Double Pushbutton Control

■ Hannifin Mfg. Co., 621 South Kolmar avenue, Chicago, has introduced a line of general utility type hydraulic presses, with automatic operating cycle, available in capacities from 12½ to 60 tons, for pressing, forming, stamping, shallow drawing and similar operations.

Press illustrated has capacity of 12½ tons. Its complete operating cycle occupies approximately 2 seconds. Operation is controlled by two push buttons, both of which must be held down to operate press. This insures that operator's hands are clear.

Press cycle includes four move-



ments: rapid advance stroke; automatic high pressure working stroke; automatic reversal; and rapid return to starting position. Oil pump idles at zero pressure between cycles.

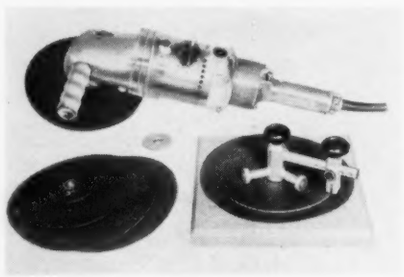
Hydraulic pressure generator is driven by a 2-horsepower motor, located at base of press.

Sander Speed Is Adjustable

■ Van Dorn Electric Tool Co., Towson, Md., has announced a 2-speed sanding unit, for use with both 7 and 9-inch abrasive disks, eliminating necessity of two tools of different speeds.

Speed adjustment is obtained by means of a simple gear shift arrangement in gear housing, which alternately engages two different sets of double gears. Armature and intermediate gears are spiral and spindle gear is spiral-bevel. Unit is equipped with patented gear locking pin to facilitate interchange of flexible pads.

It is possible with this machine to get maximum wear from a 9-inch



disk; by trimming off worn outer surface a 7-inch disk that is practically unused is obtained. A disk cutter is furnished with each unit.

No-load speed for 7-inch disks is 4200 revolutions per minute, and for 9-inch disks 2700 revoltions per minute. A universal motor, operating on alternating or direct current, is standard equipment.

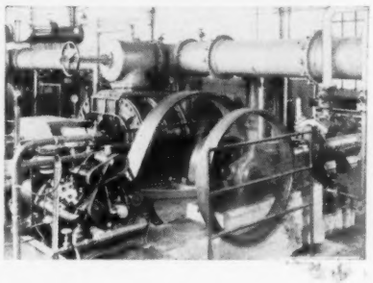
Cuts Power Costs

■ K. R. Wilson Inc., 10 Lock street, Buffalo, has added to its line an industrial power unit, built around a Ford V-8 85-horsepower truck engine.

With a standard carburetor, this engine operates on gasoline, but it can be adapted to operation with natural gas or commercial butane as fuel. Butane is a liquid hydro-carbon, non-poisonous and non-corrosive, which is stored as a liquid but utilized as a gas.

Unit has a large-diameter, alloy steel, heat-treated drive shaft, which is carried on three sets of double

row ball bearings, provided with a zerk grease fitting. Shaft assembly is built to transmit twice the power of a Ford V-8 engine. Front engine



support is one piece, channel section casting. Two front engine feet are mounted in live rubber on support. Special bus radiator keeps engine cool; units are tested in temperatures well over 120 degrees Fahr. without overheating. Fly ball governor can be regulated to operate engine at any constant speed above 1500 revolutions per minute.

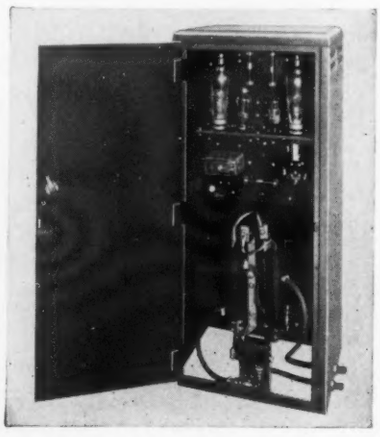
A patented device stops engine before damage can result from lack of oil or water, permitting operation without observation. To suit installation requirements, power unit is built in open and enclosed models, with or without clutch for direct drive, and with extended base for special mounting.

Unit is said to produce power at a minimum cost, largely due to economical operation of Ford engine and inexpensive replacement of parts.

Controls Welding Time

■ Westinghouse Electric & Mfg. Co., Pittsburgh, has produced an inexpensive ignitron spot welding timer, type SP-11, which provides high accuracy of control.

Timer mounts two sizes of ignitron tubes. On low duty cycles, the WL-652 tube will carry 1500 amperes at 220, 440 or 550 volts, and WL-651 will carry 2800 amperes at 440 and 550 volts or 4300 amperes at 220 volts. Current rating is decreased



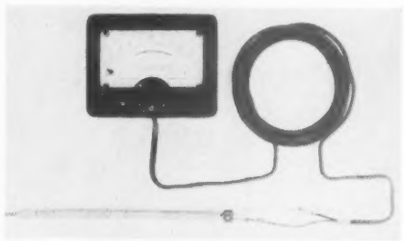
at higher duty cycles above about 3.5 per cent. Timer is adjustable to pass current for any exact number of cycles from 1 to 15. For longer times, a special model is adjustable from 1 to 30 cycles. Welding machine current starts and stops at current zero, eliminating line current transients.

Coil Rotates In Sapphire Bearings

■ Lewis Engineering Co., Naugatuck, Conn., has developed a pyromillivoltmeter of the D'Arsonval galvonometer type, calibrated to read temperature in degrees Fahr.

Instrument is housed in a flat dust-tight case of cast aluminum and has two studs for mounting on a wall bracket. It is automatically compensated for all errors due to changes of air temperature surrounding instrument and for all errors due to changes of thermocouple cold junction temperature.

Moving coil assembly consists of high resistance copper wire coil,



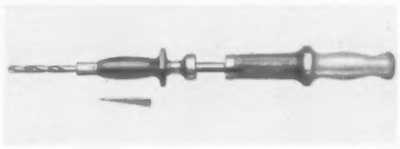
pointer and a system of delicate counterweights. Coil rotates on ground steel pivots supported in sapphire bearings. A zero adjustment screw is provided for resetting instrument zero position, but under normal operation this adjustment is necessary only at time of installation. Permanent magnet is cast of special cobalt alloy steel.

Instrument is neither low resistance or extremely high resistance type, but has been designed to give an economical balance. Industrial installations vary in price from $60.00 to $75.00.

Drill Has Sliding Stroke

■ Diamond Expansion Bolt Co., Garwood, N. J., has introduced a telescopic hammer drill, developed particularly for use in installation of expansion shields and anchors in brick, stone and concrete.

In using this drill there is no danger of operator striking his hand or wrist. Holes may be made vertically, horizontally and in awkward corners without discomfort. Each sliding stroke of hammer penetrates further, with greater accuracy and less effort. Anvil end slides smoothly for a 7½-inch



stroke, and every blow is true, giving full efficiency.

Hammer drill lists at $10 without points.

Watthour Meter and Time Switch Combined

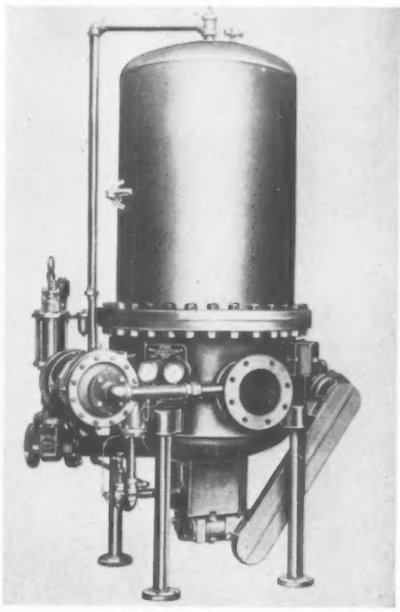
■ General Electric Co., Schenectady, N. Y., has announced a combination unit comprising an accurate watthour meter and an improved time-switch register.

This meter is available in all ratings, with any one of three registers: single-dial, with contacts; double-dial with contacts; and double-dial without contacts. Savings in space, installation and maintenance costs are among advantages of single-unit construction.

Cleans Water For Mill Use

■ Cuno Engineering Corp., Meriden, Conn., has developed an industrial filter for removal of fine dirt and sand from river water before it is used in manufacturing and mill operations.

Filter is self-cleaning wire wound type with low pressure drop. Cleaning is accomplished continuously by slowly rotating cartridge past a stationary backwash nozzle through



a motor drive. Each portion of filter element encounters a momentary reversal of flow which dislodges accumulated solids. Backwash supplied by a booster pump is obtained from a portion of cleaned liquid which has already passed through filter and is returned to system.

Filter illustrated is equipped with a hydraulically operated automatic dumping valve which opens at predetermined intervals, allowing sludge accumulated in bottom of sump to blow off. Floating sludge is removed simultaneously through a pipe connecting top of sump with blow-off valve.

Simplifies Painting

■ Binks Mfg. Co., 3114 Carroll avenue, Chicago, has added to its line a series of extension arms for use with standard production spray guns in maintenance jobs.

The two brass tubes of this extension fit into air and material connections of spray gun and are attached easily as a hose. Operator can stand on floor and paint ceiling and upper walls with 6, 8 or 10-foot extension arm. This method obviates necessity of using scaffolds and eliminates disruption of plant routine while painting is carried on.

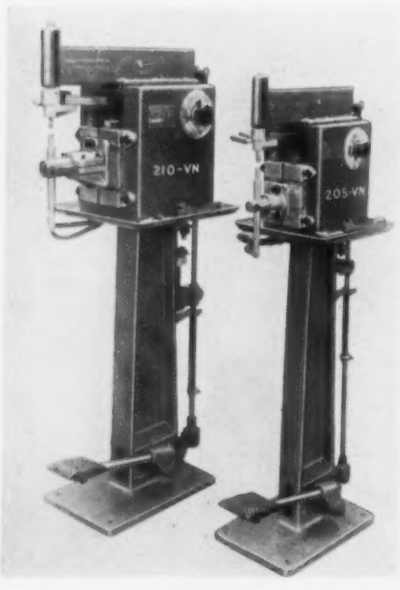
Prices for extension arms range from $17.00 to $29.00.

Weld Small Parts

■ Eisler Engineering Co., 740 South Thirteenth street, Newark, N. J., has developed a complete line of vertical welding machines for spot welding parts used in manufacture of typewriters, adding machines, clocks, safety razors and similar products.

Ranging in size from 1 to 35 kilovolt amperes, these machines are supplied in foot, air or power operated models, depending on class of service for which they are intended. For high precision work, machines are supplied with timers and contactors. A standard single phase welding transformer provides welding current, and six points of heat regulation are obtainable with dial control.

Illustration shows welders in 10 and 5-kilovolt-ampere sizes. These machines are especially adaptable where studs and lugs are to be welded to sheet metal without drilling holes. A typical application is welding electrodes to sparkplug shells.



Collet Size Changed Quickly

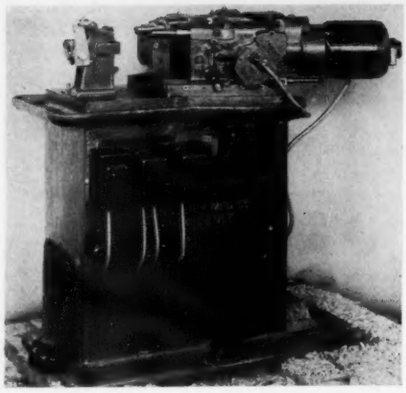
■ Modern Collet & Machine Co., Ecorse, Mich., has developed a master collet which has a special construction designed to overcome the two principle objections to this type of collet—loosening of pad screws, and the lengthy time involved in changing from one size to another.

In this construction, pad screws are integral parts of locking wedges which fit tightly into end of collet. They cannot become loose. When pads are changed, a few turns of wedge screws permit quick removal, with collet in operating position. Master collet can be converted to any new size within a few seconds.

Pads and body of collet are different steels. Pads are heat-treated to a hardness far exceeding that of body and are special wear-resisting steel. Body is made to offer utmost in toughness and resiliency throughout its length.

Drills Small Auto Parts

■ Langelier Mfg. Co., Providence, R. I., has added to its line a horizontal 2-spindle angular drilling machine, designed for drilling and counterboring of automotive parts.



Machine is constructed with two positive cam feed units mounted in connection with a manually operated clamping fixture. Electrical controls are used for tripping heads into motion, and limit switches control starting of spindles and prevent clashing of tools. Automotive parts are drilled and counterbored by carboloy tools in one operation at rate of 600 per hour.

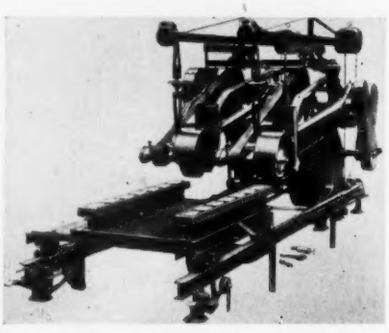
Drills Aluminum Aircraft Cylinder Heads

■ National Automatic Tool Co., Richmond, Ind., has installed recently for an aircraft engine manufacturer a precision boring machine which performs a total of 16 drilling, end cut boring, counterboring and line reaming operations on valve seats and valve guide holes in aluminum alloy cylinder heads.

Machine consists of a drilling unit and a 2-position hand indexed fixture mounted on a steel base. Unit is arranged with a special head complete with a single stub type boring spindle. One operator unloading, loading, changing tools and indexing fixture as required, maintains a production rate of from eight to ten cylinder heads per hour.

Grinds Sole Plates With Oscillating Motion

■ Excelsior Tool & Machine Co., Ridge avenue, East St. Louis, Ill., recently introduced an automatic



twin-spindle electric grinding and polishing machine, designed to remove scale and sufficient metal to obtain a clean, smooth, straight surface on sole plates.

High speed, hard center grinding wheels are used the full width of plates. Oscillating motion of carriage prevents straight line scratches and unequal wear to faces of grinding and polishing wheels.

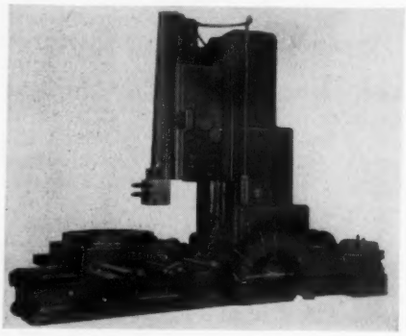
Approximately 200 castings are ground and finished per hour. Carriage travel is 30 feet per minute. Spindle speed is 2500 revolutions per minute for 14-inch wheels, and 15-horsepower motor turns at 1750 revolutions per minute.

Although designed especially for sole plate finishing, machine can be used for other grinding and polishing operations within its capacity.

Slotter Has Hydraulic Feed

■ Rockford Machine Tool Co., Rockford, Ill., has introduced a universal hydraulic slotter with adjustable ram guide and tilting ram.

Application of power to ram is direct, in a straight line close to ram bearings. Throughout 36-inch cutting stroke, speed and pressure are constant, and reversals are quick and smooth. There are no gears to shift. Machine is controlled through



a 4-lever arrangement at front of column.

Changing of the ram stroke and position relative to work is accomplished in a single operation, without altering cutting speed of the machine.

Box-section column provides rigid support for ram guide and houses rapid transverse and transmission gears, hydraulic piping, electrical controls and counterweights. Bed is a one-piece casting, bolted in place at base of column. Solid steel tool head has T-slots on two sides for mounting tools horizontally or vertically, and it may be removed for mounting cutting tools or bars directly in ram. Setting up and clamping of work is facilitated by an arrangement of T-slots machined into semi-steel rotary table. Center of table is removable for keyseating and similar operations.

Hydraulic feed is provided in longitudinal, transverse and rotary directions, and an unlimited selection of speeds or feeds throughout whole range of machine is secured by rotating a handwheel.

Eliminates Fume Hazard

■ Mine Safety Appliances Co., Braddock, Thomas & Meade streets, Pittsburgh, has announced an air line respirator which provides complete protection against welding and cutting fumes, paint spray vapors and toxic dusts.

Respirator is light and comfortable. All-rubber half mask facepiece fits any face with a gas-tight seal. Incoming air is deflected from directly striking face. A corrugated, non-collapsible rubber connecting tube extends from face-piece to flow control valve at belt.

These respirators are recommended for use only in atmospheres that are not immediately dangerous to life or from which wearer could escape without protection.

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Send your new catalog—we use screens for

Name _____ Title _____
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Improves Storage

(*Concluded from Page* 48)

it is stored. The slitters have been placed at one end of the store room for maximum economy. Sheet Slitter is placed under the same crane that serves the flat-sheet storage. Thus it is possible to pick up one of the unit loads previously put into storage. This unit load is carried by grab and crane as in Fig. 1 and placed in position by the table behind the slitter as shown in Fig. 3.

Coil stock slitter is placed so it may be served by a crane of its own. The coils are transported by lift truck from their position in storage under the crane where they are turned on edge from flat position to permit slitting horizontally.

Although the new warehouse has not been in operation long enough to make a real worth while statement as to savings, considerable savings are evident in the handling of material.

In addition to reducing fatigue of the workmen and making handling work much easier, there are other advantages. Greater storage capacity in the same space and increased safety, both of which were carefully considered in the design of the new warehouse, have been realized.

CLEVELAND TRAMRAIL

MATERIALS HANDLING EQUIPMENT

• Cleveland Tramrail Hand Propelled Cranes and Carriers for inexpensive but efficient service in warehouse and shop stock room.

• Cleveland Cranes and Carriers carry a

Guaranteed { starting effort 15 pounds / running effort 10 pounds } per ton of total load

ALSO BUILDERS OF

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Division of

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Or consult your phone directory under Cleveland Tramrail.

Book Outlines Course For Greater Profits

■ A book that gets down to specific cases and tells how engineers and executives have lowered costs, stopped waste and increased industrial efficiency has recently been published by Esterline-Angus Co., Indianapolis, Ind.

The book entitled, "Graphic Routes to Greater Profits" was compiled by John W. Esterline. It contains a new technique in solving industrial problems with inside stories of savings in every type of industry, leaks discovered and the corrections applied. Some of the feature discussions embody power problems, problems of machines, perfecting processes, problems of men and planning the future. The book is now on sale and is available by addressing the company.

New Lighting Principle

■ An illuminant employing an entirely new principle, fluoresence, has been developed by the lamp division of Westinghouse Electric & Mfg. Co., Pittsburgh.

This tubular lamp, called Fluorescent Lumiline, utilizes a very low pressure mercury vapor discharge which produces ultraviolet radiation, giving very little visible light or heat radiation. Inside surface of glass tube of lamp is coated with chemicals which fluoresce, or glow, when struck by invisible ultraviolet rays.

Varying from 18 to 36 inches in length, lamp is available in warm white, daylight white, gold, red, blue, pink and green. It is double-ended, each end being equipped to fit into a special receptable. Auxiliaries for current and switching control are required.

Characterized by coolness of operation, florescent lamp runs only a few degrees hotter than surrounding air. Its surface is low in brightness, reducing glare.

Form Standard Solutions

■ A leaflet describing De-Haen's Fixanal preparations for standard solutions has been prepared by Pfaltz & Bauer Inc., Empire State building, New York, and copies are available upon request.

These packaged preparations produce accurate volumetric solutions when diluted according to directions. Special normalities are available for smelting works laboratories.

Advertisement

COPPER ALLOY BULLETIN

Reporting News and Technical Developments of Copper and Copper-Base Alloys

SEPTEMBER "Bridgeport" BRASS CO. 1938

DOMESTIC POWER OUTPUT RISE PRESAGES APPLIANCE SALES

Expansion in the residential use of power has greatly increased the opportunities for the use of copper and copper-base alloys. A direct result of the rising consumption of electrical energy is the use of large quantities of copper in the construction of generating and distributing equipment and of transmission lines. More important to the fabricator of copper and its alloys, however, is the fact that the growth signifies an increased use of electrical appliances. The trend of residential power use, consistently upward except for temporary setbacks, indicates that the possibilities of this market are far from exhausted.

Refrigerators, clocks, irons, washing machines, water heaters, and oil burners are but a few items from the long list of electrical appliances which have played a part in increasing 1937 residential consumption 77 per cent over the 1929 figures. (During the same period commercial users increased their demand 28 per cent.)

Rural Areas Best Market

Particularly interesting to manufacturers of electrical appliances is the extremely rapid growth in the use of electricity in rural areas in the last two years. In 1935 rural consumers numbered 788,795; last year the total had swelled to 1,241,505. These figures represent an increase of approximately 57 per cent, but in the same period the number of kilowatt-hours consumed rose only 40 per cent. There has, therefore, actually been a decrease in the amount of energy used per consumer—a sharp contrast to conditions in the country at large, where energy consumption has risen much more rapidly than number of users. In view of these figures, it is reasonable to assume that purchases of electrical appliances in rural areas have lagged behind those in other sections of the country, and that a considerable potential market exists in the rural districts for the appliance manufacturers.

Possible expansion of housing facilities and rewiring of existing buildings to replace wiring systems rendered inadequate by increased loads are other activities which are expected to increase the demand for copper and copper-base alloys.

5,000-Year-Old Copper Pan

Among the exhibits in the University of Pennsylvania Museum is a copper frying pan which was excavated at Tepe Gawra in 1930. The age of the pan is estimated to be 5,000 years; yet it has so successfully resisted the inroads of time that it could be used today for the purpose for which it was originally made—a striking illustration of the ability of copper to withstand the test of time.

COPPER TUBING AND SOLDER-TYPE FITTINGS AID RAILWAY, MARINE, INDUSTRIAL FIELDS

Freedom From Vibration Troubles, Corrosion Resistance, Lightness, are Factors in its Increasing Application

Copper tubing with solder-type fittings which has established its superiority over more easily corrosible metals for domestic plumbing installations, is becoming increasingly important in a long list of applications in the industrial and marine fields.

For general-purpose piping in industrial plants its major advantages are its ease of installation, long life, low maintenance cost, and ready adaptability to changes in plant structure. Because of its high resistance to attack by atmospheric moisture, clean water, and solutions that are not exceptionally corrosive, it is ideally suited for keeping air and liquids conveyed by it free from contamination. Typical examples of its use, in addition to water piping, are compressed air lines, air conditioning and refrigerating equipment, and piping in laundries, sugar refineries, breweries, tanneries, dye works, and rayon plants.

Flexible copper tubing can be readily bent to clear obstructions, and can be used in smaller sizes than ferrous pipe, because no allowance is necessary for future restriction of the passage by rust. Maintenance and servicing of copper lines assembled with solder-type fittings may be readily carried out, since by heating the fittings the solder of the joint is softened, and the fitting may be removed and replaced without difficulty.

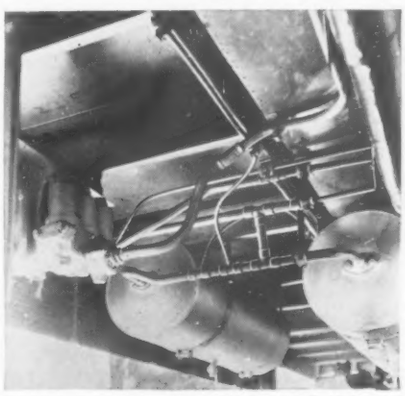
Marine Service

The resistance of copper tubing to damage from vibration is one of the factors that make it suitable for the construction of pipe lines on shipboard. A contributing advantage is its lightness in weight compared to other types of piping. These same factors have led to its use in other fields of transportation, such as air conditioning equipment, heating, water and air lines in railways, gas lines on automobiles, and oil lines for hydraulic brakes.

Approved for Fire-Protection Sprinkler Systems

Approval of Bridgeport's copper pipe for use with solder-type fittings for fire-protection sprinkler systems by the Underwriters' Laboratories, Inc., of the National Board of Fire Underwriters, opens up a new field. Formerly the regulations for the installation of sprinkler equipment required that "all piping shall be installed by means of screwed or flanged fittings," and in the

(Continued on following page, Column 2)



Courtesy American Radiator Co.

Copper tube and solder-type fittings are utilized for all types of supply lines on many of the new streamlined trains. This photo shows the piping connections on the air supply reservoirs of the air brake equipment. Copper is preferred because of its resistance to corrosion and rust, its light weight and dependability, and the fact that vibration cannot loosen the fittings, as there are no screwed joints.

Copper and Silver Combined In New Container

An interesting application of copper is in the construction of new containers designed for essential oils and similar materials. The containers are made of a sheet formed by combining a sheet of copper with a sheet of silver, which is approximately one-tenth the thickness of the copper. The silver is inert to the liquids for which the container is used; the combination with copper permits the manufacture of a container of adequate strength at moderate cost.

New Metal Coating Process

A new process for coating brass, copper, and other metals with tin is said to be applicable to the most complicated fabricated shapes. The method consists in suspending the articles for a few minutes in an atmosphere of hydrogen and stannous chloride vapor at a temperature of 500 to 600 degrees C. The hydrogen reduces the stannous chloride to tin which then alloys with the article. Thickness and composition of the alloy formed depend upon regulation of temperature and exposure time.

COPPER ALLOY BULLETIN

NEW DEVELOPMENTS

This column *lists items manufactured or developed by many different sources. Further information on any of these items may be obtained by writing the Bridgeport Brass Company, who will gladly refer readers to the manufacturer or other source.*

A wire reel, originally developed for use with metal spray guns, is said to be suitable for any application in which it is important that wire be fed without kinking or drag overloading. The complete unit consists of the reel with ball-bearing mounting and a metal stand with tray and tool drawer. The reel operates with adjustable brake which prevents overrunning and can be set to maintain the desired tension on the wire.

A polishing attachment can be applied to a polishing-wheel stand in order to manipulate the work against the wheel. The work is placed on the machine spindle, which is motor-driven under control of the operator, who can start and stop rotation and bring the work against the polishing wheel or move it away as he desires.

A new metal polish is said to produce a deep, shimmering lustre without haze, and to leave no heavy residue to cling to rough surfaces and cracks.

An air cleaner for grinding and welding operations is said to remove approximately 95 per cent of the dirt from the air in the vicinity. It consists of a motor-driven fan which produces suction to draw air through a flexible metal tube and exhaust it in a filter located in the periphery of the power unit.

A new buff is designed for faster cutting, longer buff life, and better finish. The cloth used in the buff is folded in such a way as to present a larger number of edges to the work which will produce a cutting rather than a rubbing action. Air spaces between the folds of the cloth dissipate the heat produced by friction.

Wrinkle finishes are now available in practically all colors. In the past these finishes have been limited to the darker colors, but pastels and even white can now be used without discoloration in the baking process. The new finishes are also said to bake hard and wear-resistant with a short baking schedule.

Barrel plating equipment of the hopper type is reported to give low production costs and high capacity, proper control of treatments, and in general a more effective job than is possible with dipping baskets.

COPPER TUBING USES EXPAND

(Continued from preceding page, column 3)

case of concealed pipe systems that "pipe shall be of standard weight wrought iron or steel, painted with two coats of good protective paint, one before and one after installation."

However, after due investigation, Bridgeport's copper pipe was found "suitable for use in lieu of wrought iron or steel in the fabrication of automatic sprinkler branch lines when used with listed solder-joint type fittings" and the following recommendation was accepted and approved:

"Bridgeport" hard drawn, copper water tube, for use with listed fittings (solder-joint type) in fabrication of branch lines, trim, of alarm and dry pipe valves, supply and heater connections to gravity tanks, bell line piping and other similar piping of automatic sprinkler equipment, where working pressures do not exceed 175 lbs. per sq. in., in the following types and sizes:

Type K— ¼ to 2 in., inclusive.
Type L— ¾ to 2 in., inclusive.
Type M—1¼ to 2 in., inclusive.

Much valuable information on the properties and applications of copper tubing is contained in the booklet, "Water Pipe Sizes," copies of which may be obtained by writing the Bridgeport Brass Company.

Copper Alloys Popular for Commemorative Medals

The copper alloys, long in life because they resist the effect of time and weather, are peculiarly suitable to the striking of commemorative coins or medals because of the inherent attractiveness and popularity of the rich bronze and warm golden colors obtainable. Where other metals quickly tarnish or corrode, the copper alloys retain their attractive appearance for long periods.

Typical of this application are the medals of high copper brass manufactured by The Metal Arts Co., Inc., of Rochester, N. Y., to commemorate the 75th Anniversary of the Battle of Gettysburg.

BRASS TERMINOLOGY

The terms discussed in this column in the August issue of the COPPER ALLOY BULLETIN, with the exception of ingot, apply specifically to brass.

Brass and Copper Terms

There is another group of terms, which may apply to both brass and copper, and which require clear understanding. The terms in this group may be conveniently arranged in three pairs: sheet and strip; rod and wire; pipe and tube. These terms give rise to considerable confusion, because both of the terms in any one pair refer to forms of metal which display marked superficial resemblances to each other.

Sheet and strip are practically synonymous. The wider form is referred to as sheet and the narrower form as strip. Both may be furnished flat or in rolls.

Rod and wire are sometimes incorrectly believed to be differentiated by their dimensions. Actually no such distinction exists. Rod is furnished in straight lengths; wire in the form of coils. For example, a coil of metal 1 inch in diameter is wire, while a straight length ½-inch in diameter is rod. In other words, straightened wire cut to length becomes rod.

Pipe and tube have already been discussed in an earlier issue. If dimensions are based upon Standard Pipe Sizes (also referred to as Iron Pipe Sizes), the form is a pipe. In the case of copper water tubing, the nominal size is always ⅛-inch smaller than the actual outside diameter. In other words, a 2-inch copper tube has an actual O.D. of 2⅛ inches. Seamless tubing applies to brass or copper tube which is outside the dimensions of pipe and water tube and which is used for other purposes.

Copper Terminology Only

The following terms apply to copper:

Ingot bar is a multiple ingot, equivalent in weight to about three ingots.

Wire bar is flat poured into a metal mold in the shape of a rectangular rod tapered at each end. It may also be end poured in which case the gate end is pointed. Size is approximately 4 inches by 4 inches by 4 to 5 feet long, depending on weight.

Cake is cast in a square open metal mold or end poured, and later hot rolled into sheet or strip.

Slab is cast in a rectangular open mold for rolling into strip.

Wedge Cake, end poured, is a rectangular bar about 4 by 12 by 12 inches for hot rolling into sheet or strip.

Cake, end poured, is a rectangular bar end poured in metal mold for hot rolling into sheet or strip.

PRODUCTS OF THE BRIDGEPORT BRASS COMPANY

Executive Offices: BRIDGEPORT, CONN.—Branch Offices and Warehouses in Principal Cities

SHEETS, ROLLS, STRIPS—*Brass, bronze, copper, Duronze,** for stamping, deep drawing, forming and spinning.

CONDENSER, HEAT EXCHANGER, SUGAR TUBES—For steam surface condensers, heat exchangers; oil refineries, and process industries.

PHONO-ELECTRIC* ALLOYS—High-strength bronze trolley, messenger wire and cable.

WELDING ROD—For repairing cast iron and steel, fabricating silicon bronze tanks.

LEDRITE* ROD—For making automatic screw machine products.

"Bridgeport" BRASS CO.

Established 1865

COPPER WATER TUBE AND FITTINGS—For plumbing, heating, underground piping.

DURONZE ALLOYS—High-strength silicon bronzes for corrosion-resistant connectors, marine hardware; *hot rolled sheets* for tanks, boilers, heaters, flues, ducts, flashings.

BRASS, BRONZE, DURONZE WIRE—For cap and machine screws, wood screws, rivets, bolts, nuts.

FABRICATING SERVICE DEPT.—Engineering staff, special equipment for making parts or complete items.

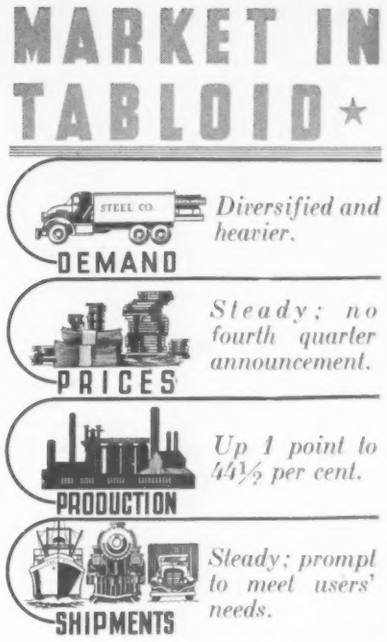
BRASS AND COPPER PIPE—"Plumrite"* for plumbing, underground and industrial services.

*Trade-name.

BRIDGEPORT BRASS

Improvement Steady as Autumn Buying Nears

Building Projects More Numerous; Scrap Firm



■ DEFINITE improvement in sentiment pervades the steel market, which is in a waiting attitude pending developments following the Labor day interruption.

Steady increase in production, which started early in July, is continued and indications are that the rise is likely to reach well into the fall. Practically all producers found August well above July in tonnage and much of the increase was in the last two weeks.

A decided upward movement in structural steel projects is providing considerable tonnage, lettings, largely of a public nature, being more numerous than at any time this year and tonnage reaching a high level. Current lettings are well spread and all producers are participating in the business. Pending projects are numerous, assuring continuance of present activity.

Recent structural awards include 6275 tons for a subway in Brooklyn, N. Y.; 1525 tons for a building for Sheffield Farms, New York; 1500 tons for a hangar at Scott Field, Belleville, Ill.; 1400 tons of sheet piling for a shore improvement at Long Branch, N. J.; 1166 tons for a bridge for the Big Four at Bloomfield, Ill.

Some oil companies are figuring on additional equipment and shipbuilding is progressing to the point where requirements are being specified in larger tonnages. Agricultural implement manufacturers and machine tool builders are increasing production, a seasonal movement, and are buying more steel than during the summer. Housing projects in New York furnish heavy pipe tonnages in addition to considerable demand for large diameter pipe for public works in that area.

An advance of 1 point was registered last week in the national operating rate, which reached 44.5 per cent. Pittsburgh was the only district showing a lower rate, down 1 point to 32 per cent. Chicago gained 2.5 points to 40 per cent, Eastern Pennsylvania 3 points to 33, Buffalo 2.5 points to 49, Birmingham 3 points to 56, St. Louis 12 points to 45, Detroit 7 points to 67 and Youngstown 2 points to 45. There was no change at Cleveland at 41, Cincinnati at 65, New England at 50 and Wheeling at 54.

Pig iron output in August was 1,495,245 tons, 23.3 per cent over July in both daily average and total tonnage. Average daily production was 48,234 tons, compared with 39,131 tons in July and 116,676 tons in August, 1937. The net gain in active blast furnace stacks was 11.

No announcement has been made on prices for fourth quarter although such action usually is taken by this time. Indications would lead to the belief present prices are likely to continue to the end of the year in most products. For the most part current prices are steady except in reinforcing bars and fabricated steel, where some concessions are being made.

Automobile production last week rose to 22,165 units from 18,700 the preceding week. General Motors made 1500 cars, against 500; Chrysler 4600, compared with 1950 and Ford 13,250 against 14,000. Others produced a total of 2815 units, compared with 2250.

Some tonnage of steel for initial runs of new model automobiles have been placed and specifications against these commitments are a factor in the steady increase of mill operation. However, much more remains to be bought as assembly gets under way. Automobile builders are planning for an active fall trade, which will call for much steel if realized.

Railroad buying scarcely can be counted on to give much tonnage for early fall. Failure of wage arbitration and call for a strike vote of railroad employes make the situation of the carriers more uncertain than before and present light buying seems likely to be continued, covering only most immediate needs. Repairs are being undertaken by several roads to provide more available cars for currently increasing business. Approval of a $5,000,000 loan to New York Central assures purchase of 28,600 tons of rails and steel for a large car and locomotive repair program by that road. Announcement by Inland Steel Co. that the minimum base on steel rails has been reduced from 500 to 200 tons affords a measure of relief to roads seeking small lots of rails for pressing maintenance needs.

A slight adjustment at Chicago brought an increase of four cents in the steelworks scrap composite, to $14.29. The iron and steel composite remained at $36.50 and the finished steel at $57.20.

COMPOSITE MARKET AVERAGES

	Sept. 3	Aug. 27	Aug. 20	One Month Ago Aug., 1938	Three Months Ago June, 1938	One Year Ago Sept., 1937	Five Years Ago Sept., 1933
Iron and Steel	$36.50	$36.50	$36.49	$36.50	$38.41	$40.16	$30.36
Finished Steel	57.20	57.20	57.20	57.20	61.55	61.70	48.52
Steelworks Scrap	14.29	14.25	14.29	14.44	10.89	18.99	10.83

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Sept. 3, 1938	Aug. 1938	June 1938	Sept. 1937
Steel bars, Pittsburgh	2.25c	2.25c	2.45c	2.45c
Steel bars, Chicago	2.25	2.25	2.40	2.50
Steel bars, Philadelphia	2.57	2.57	2.47	2.74
Iron bars, Terre Haute, Ind.	2.15	2.15	2.35	2.35
Shapes, Pittsburgh	2.10	2.10	2.25	2.25
Shapes, Philadelphia	2.215	2.215	2.405	2.455
Shapes, Chicago	2.10	2.10	2.25	2.30
Plates, Pittsburgh	2.10	2.10	2.25	2.25
Plates, Philadelphia	2.15	2.15	2.38	2.435
Plates Chicago	2.10	2.10	2.25	2.30
Sheets, hot-rolled, Pittsburgh	2.15	2.15	2.40	2.40
Sheets, cold-rolled, Pittsburgh	3.20	3.20	3.45	3.55
Sheets, No. 24, galv., Pittsburgh	3.50	3.50	3.75	3.80
Sheets, hot-rolled, Gary	2.15	2.15	2.40	2.50
Sheets, cold-rolled, Gary	3.20	3.20	3.20	3.65
Sheets, No. 24, galv., Gary	3.50	3.50	3.80	3.90
Bright bess., basic wire, Pitts.	2.60	2.60	2.90	2.90
Tin plate, per base box, Pitts.	$5.35	$5.35	$5.35	$5.35
Wire nails, Pittsburgh	2.45	2.45	2.75	2.75

Semifinished Material

Sheet bars, open-hearth, Youngs.	$34.00	$34.00	$37.00	$37.00
Sheet bars, open-hearth, Pitts.	34.00	34.00	37.00	37.00
Rerolling billets, Pittsburgh	34.00	34.00	37.00	37.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	43.00	43.00	47.00	47.00

Pig Iron

	Sept. 3, 1938	Aug. 1938	June 1938	Sept. 1937
Bessemer, del. Pittsburgh	$21.34	$21.34	$25.34	$25.26
Basic, Valley	19.50	19.50	23.50	23.50
Basic, eastern, del. Philadelphia	21.34	21.34	21.34	25.26
No. 2 foundry, Pittsburgh	21.21	21.21	25.21	25.21
No. 2 foundry, Chicago	20.00	20.00	24.00	24.00
Southern No. 2, Birmingham	16.38	16.38	20.38	20.38
Southern No. 2, del. Cincinnati	19.89	19.89	23.89	23.69
No. 2X eastern, del. Philadelphia	22.215	22.215	22.215	26.135
Malleable, Valley	20.00	20.00	24.00	24.00
Malleable, Chicago	20.00	20.00	24.00	24.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	30.34	30.04
Gray forge, del. Pittsburgh	20.17	20.17	24.17	24.17
Ferromanganese, del. Pittsburgh	97.77	97.77	107.77	107.29

Scrap

Heavy melting steel, Pittsburgh	$15.25	$15.20	$11.40	$20.40
Heavy melt. steel, No. 2, E. Pa.	12.75	13.00	9.875	16.69
Heavy melting steel, Chicago	13.75	14.00	10.25	17.85
Rails for rolling, Chicago	17.75	18.25	14.90	20.35
Railroad steel specialties, Chicago	16.75	16.75	13.50	20.50

Coke

Connellsville, furnace, ovens	$ 3.75	$3.75	$3.90	$4.45
Connellsville, foundry, ovens	5.00	5.00	5.05	5.25
Chicago, by-product fdry., del.	10.50	10.50	11.00	11.00

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh, Gary	2.15c
Chicago, delivered	2.18c
Cleveland	2.15c
Detroit, del.	2.25c
Buffalo	2.15c
Sparrows Point, Md.	2.15c
New York, del.	2.39c
Philadelphia, del.	2.32c
Granite City, Ill.	2.25c
Middletown	2.15c
Youngstown	2.15c
Birmingham	2.15c
Pacific Coast points	2.65c

Cold Rolled

Pittsburgh, Gary	3.20c
Chicago, delivered	3.23c
Buffalo	3.20c
Cleveland	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.52c
New York, del.	3.54c
Granite City, Ill.	3.30c
Middletown	3.20c
Youngstown	3.20c
Pacific Coast points	3.80c

Galvanized No. 24

Pittsburgh, Gary	3.50c
Chicago, delivered	3.53c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown	3.50c
Youngstown	3.50c
Pacific Coast points	4.00c

Tin Mill Black No. 29

Pittsburgh	3.15c
Gary	3.15c
Granite City, Ill.	3.25c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.95c
Pacific Coast	4.65c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, Del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin plate, coke (base box) Pittsburgh, Gary	$5.35
Granite City	5.45
Mfg. terne plate, Pittsburgh, Gary	4.65c
Granite City	4.75c

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.25c
Chicago or Gary	2.25c
Duluth	2.35c
Birmingham	2.25c
Cleveland	2.25c
Buffalo	2.25c
Detroit, delivered	2.35c
Philadelphia, del.	2.57c
Boston, delivered	2.62c
New York, del.	2.59c
Gulf ports	2.60c
Pacific Coast points	2.85c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.10c
Chicago or Gary	2.10c
Detroit, delivered	2.20c
Cleveland	2.10c

Buffalo	2.10c
Birmingham	2.10c
Gulf ports	2.45c
Pacific coast points	2.70c
Iron	
Terre Haute, Ind.	2.15c
Chicago	2.15c
Philadelphia	2.47c
Pittsburgh, refined	3.50-8.00c
Reinforcing	
New billet, straight lengths, quoted by distributors	
Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt.	2.05c
Detroit, delivered	2.15c
Gulf ports	2.40c
Pacific coast ports, f.o.b. car docks	2.50c
Philadelphia, del.	2.22c
Rail steel, straight lengths, quoted by distributors	
Pittsburgh, Gary, Chicago, Buffalo, Cleveland, Birmingham	1.90c
Detroit, delivered	2.00c
Gulf ports	2.25c
Pacific Coast	2.35c

Wire Products

Pitts.-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails	$2.45
Cement coated nails	$2.45
(Per pound)	
Polished staples	3.15c
Galv. fence staples	3.40c
Barbed wire, galv.	3.20c
Annealed fence wire	2.95c
Galv. fence wire	3.35c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00
To Manufacturing Trade	
Base, Pitts.-Cleve.-Chicago-Birmingham (except spring wire)	
Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c
Worcester, Mass., $2 higher on bright basic and spring wire.	
Cut nails, C. L. Pitts. (10% disc. on all extras)	$3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.70c	3.40c
Chicago	2.70c	3.40c
Gary, Ind.	2.70c	3.40c
Detroit	2.75c	*3.50c
Cleveland	2.70c	3.40c
Buffalo	2.70c	3.40c

*Delivered.

Alloy Bars (Hot)

(*Base, 3 to 25 tons*)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 2.80c

Detroit, delivered 2.90c

Alloy	Diff.	Alloy	Diff.
S.A.E.		S.A.E.	
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 0.55

4600 0.20 to 0.30 Mo. 1.50-2.00 Ni. 1.10

5100 0.80-1.10 Cr. 0.45

5100 Cr. spring flats 0.15

6100 bars 1.20

6100 spring flats 0.85

Cr. N., Van. 1.50

Carbon Van. 0.85

9200 spring flats 0.15

9200 spring rounds, squares 0.40

Electric furnace up 50 cents.

Piling

Pittsburgh	2.40c
Chicago, Buffalo	2.40c
Gulf ports	2.75c

Strip and Hoops

(Base, hot-rolled, 1 to 25 tons; cold-rolled, 3 to 25 tons)

Hot strip to 23/8-in. Pittsburgh, Chicago, Gary, Cleveland Youngstown, Middletown Birmingham	2.15c
Detroit, del.	2.25c
Philadelphia, del.	2.47c
New York, del.	2.51c
Cooperage hoop, Pittsburgh, Chicago	2.25c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.95c
Chicago	3.05c
Detroit, del.	3.05c
Worcester, Mass.	3.15c

Carbon	Cleve. Pitts.
0.26—0.50	2.95c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass., $4 higher.

Commodity Cold-Rolled Strip	
Pitts.-Cleve.-Youngstown	3.10c
Detroit, del.	3.20c
Worcester, Mass.	3.50c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$42.50
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00
Angle bars, billet, mills	2.80c
Do., axle steel	2.35c
Spikes, R. R. base	3.15c
Track bolts, base	4.35c
Car axles forged, Pitts., Chgo., B'ham.	3.15c
Tie plates, base	$46.00

Base, light rails 25 to 60 lbs.; 20 lbs. up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller	65-5-5 off
Do. larger, to 1-in.	60-10-5 off
Do. 1⅛ and larger	60-5-5 off
Tire bolts	50-5 off

Stove Bolts

In packages with nuts attached 70-5 off; in packages with nuts separate 70-10-5 off; in bulk 80-5 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	50-10-5-5 off
Elevator bolts	50-10-5-5 off
Plow Bolts	
All sizes	65-5-5 off
Nuts	
Semifinished hex.; ⅛-in. and smaller	60-10-5 off
Do., ⅞ to 1-inch	60-5-5 off
Do., over 1-inch	60-5 off
Hexagon Cap Screws	
Milled	50-10-5 off
Upset, 1-in. smaller	67½-10 off
Square Head Set Screws	
Upset, 1-in., smaller	75-10 off
Headless set screws	70-10 off

Rivets, Washers

Structural, Pittsburgh, Cleveland	3.40c
Structural, Chicago	3.40c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila. to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75 off	
Do., less carloads, 5 kegs or more, no discount on any extras	$3.90
Do., under 5 kegs no disc. on any extras	$4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2½ less. Wrought pipe, Pittsburgh.

Butt Weld

In.	Steel Blk.	Steel Galv.
⅛	63⅛	54
¼	66⅛	58
⅜—3	68⅛	60⅛
Iron		
¼	30	13
⅜—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

	Steel Blk.	Steel Galv.
2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54
Iron		
2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

	Steel Blk.	Steel Galv.
1 to 3, butt weld	67½	
2, lap weld	60	
2½ to 3, lap weld	63	
3½ to 6, lap weld	65	
7 and 8, lap weld	64	
10-inch lap weld	63½	
12-inch, lap weld	62½	
Iron		
	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O. D.	13	$ 9.72	$23.71
1¾" O. D.	13	11.06	22.93
2" O. D.	13	12.38	19.35
2¼" O. D.	13	13.79	21.68
2¼" O. D.	12	15.16	.....
2½" O. D.	12	16.58	26.57
2¾" O. D.	12	17.54	29.00
3" O. D.	12	18.35	31.36
3½" O. D.	11	23.15	39.81
4" O. D.	10	28.66	49.90
5" O. D.	9	44.25	73.93
6" O. D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O. D.	13	$ 7.82	$ 9.01
1¼" O. D.	13	9.26	10.67
1½" O. D.	13	10.23	11.79
1¾" O. D.	13	11.64	13.42
2" O. D.	13	13.04	15.03
2¼" O. D.	13	14.54	16.76
2¼" O. D.	12	16.01	18.45
2½" O. D.	12	17.54	20.21
2¾" O. D.	12	18.59	21.42
3" O. D.	12	19.50	22.48
3½" O. D.	11	24.62	28.37
4" O. D.	10	30.54	35.20
4½" O. D.	10	37.35	43.04
5" O. D.	9	46.87	54.01
6" O. D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$42.00-43.00
4-in., Birmingham	45.00-46.00
4-in., Chicago	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

6 x 6 to 9 x 9-in., base

Pitts., Chicago, Buffalo	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to 9/32-inch incl.	43.00
Do., over 9/32 to 11/64-in. incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Milwaukee, ovens	10.50
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha	
Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c
Per lb. f.o.b. Frankford and St. Louis	
Phenol (200 lb. drums)	16.25c
Do. (450 lbs.)	15.25c
Eastern Plants, per lb.	
Naphthalene flakes, balls, bbls. to jobbers	6.75c
Per ton, bulk, f.o.b. port	
Sulphate of ammonia	$27.00

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$21.00	$21.50	$20.50	$22.00
Birdsboro, Pa.	21.00	21.50	20.50	22.00
Birmingham, Ala.‡	16.38	.....	15.38	21.00
Buffalo	20.00	20.50	19.00	21.00
Chicago	20.00	20.00	19.50	20.50
Cleveland	20.00	20.00	19.50	20.50
Detroit	20.00	20.00	19.50	20.50
Duluth	20.50	20.50	.....	21.00
Erie, Pa.	20.00	20.50	19.50	21.00
Everett, Mass.	21.75	22.25	21.25	22.75
Granite City, Ill.	20.00	20.00	19.50	20.50
Hamilton, O.	20.00	20.00	19.50	.....
Neville Island, Pa.	20.00	20.00	19.50	20.50
Provo, Utah	18.00	.....	.....	.....
Sharpsville, Pa.	20.00	20.00	19.50	20.50
Sparrow's Point, Md.	21.00	.....	20.50	.....
Swedeland, Pa.	21.00	21.50	20.50	22.00
Toledo, O.	20.00	20.00	19.50	20.50
Youngstown, O.	20.00	20.00	19.50	20.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	21.39	21.39	20.89	21.89
Baltimore from Birmingham	21.78	.....	20.66	.....
Boston from Birmingham	21.87	.....	.....	.....
Boston from Everett, Mass.	22.25	22.75	21.75	23.25
Boston from Buffalo	22.25	22.75	21.75	23.25
Brooklyn, N. Y., from Bethlehem	23.50	24.00	.....	.....
Canton, O., from Cleveland	21.39	21.39	20.89	21.89
Chicago from Birmingham	†20.22	.....	.....	.....
Cincinnati from Hamilton, O.	20.44	21.11	20.61	.....
Cincinnati from Birmingham	20.06	.....	19.06	.....
Cleveland from Birmingham	20.32	.....	19.82	.....
Mansfield, O., from Toledo, O.	21.94	21.94	21.44	21.44
Milwaukee from Chicago	21.10	21.10	20.60	21.60
Muskegon, Mich., from Chicago, Toledo or Detroit	23.19	23.19	22.69	23.69
Newark, N. J., from Birmingham	22.15	.....	.....	.....
Newark, N. J., from Bethlehem	22.53	23.03	.....	.....
Philadelphia from Birmingham	21.46	.....	20.96	.....
Philadelphia from Swedeland, Pa.	21.84	22.34	21.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	22.45	22.45	21.95	21.95
St. Louis, northern	21.55	20.55	20.05	.....
St. Louis from Birmingham	†20.12	.....	19.82	.....
St. Paul from Duluth	22.63	22.63	.....	23.13

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $25.50, Phil. base, standard and copper bearing, $26.63.

Gray Forge		Charcoal	
Valley furnace	$19.50	Lake Superior fur.	$25.00
Pitts. dist. fur.	19.50	do., del. Chicago	28.34
		Lyles, Tenn	23.50

Silvery†

Jackson county, O., base: 6-6.50 per cent $24.50; 6.51-7—$25.00; 7-7.50—$25.50; 7.51-8—$26.00; 8-8.50—$26.50; 8.51-9—$27.00; 9-9.50—$27.50; Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	56.05
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net ton, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$23.50-24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $20, barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $92.50; Do., del. Pittsburgh 97.77

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00; Do., New Orleans 28.00; Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50; Do., ton lot 80.50; Do., 75 per cent 126.00; Spot, $5 a ton higher.

Silicoman., 2½ carbon 97.75; 2% carbon 102.75 1%, 112.75 Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars .60-1.65

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80

Ferrophosphorus, per ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del. carlots 10.50c; Do., ton lots 11.25c; Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c; Do., ton lots 17.25c; Do., less-ton lots 17.50c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40%, lb. con. ti., ton lots $1.23; Do, less-ton lots 1.25; 20-25% carbon, 0.10 max., ton lots, lb. 1.35; Do, less-ton lots 1.40

Spot 5c higher

Ferrocolumbium, 50-55%, contract, lb. con. col., f.o.b. Niagara Falls $2.25; Do, less-ton lots 2.30

Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50; Do, spot 145.00; Do, contract, ton lots 145.00; Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50; Do, spot 160.00; Do, contract, ton lots 160.00; Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c; Do, ton lots 8.00c; Do, less-ton lots 8.50c

Spot ½c lb. higher

Chromium Briquets, contract carloads, freight allowed, lb. 7.25c; Do, spot carlots, bulk 7.50c; Do, ton lots 8.00c; Do, less-ton lots 8.50c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.00; Do, smaller lots 2.10

Vanadium Pentoxide, contract, lb. contained $1.10; Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c; Do, spot 85.00c; 88% chrome, contract 79.00c; Do, spot 84.00c

Silicon Metal, 1% iron, contract, lb. 14.50c; Do, 2% 13.00c

Spot ¼c higher

Silicon Briquets, contract, carloads, freight allowed, ton $69.50; Carload, spot 74.50; Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, freight allowed lb. 4.75c; Ton lots 5.25c; Less-ton lots 5.50c

Spot ¼c higher

Zirconium Alloy, 12-15%, carloads, gross ton $97.50; Do, spot 102.50; 34-40%, contract, carloads, lb., alloy 14.00c; Do, ton lots 15.00c; Do, less-ton lots 16.00c

Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa., 200-lb. kegs, lb. $2.60; Do, 100-200 lb. lots 2.75; Do, under 100-lb. lots 3.00

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets Hot Rolled	Sheets Cold Rolled	Sheets Galv. No. 24
Boston	3.98	4.21	5.21	3.85	3.85	5.66	3.86	4.93	4.76
New York (Metropolitan)	3.94	4.11	4.11	3.76	3.75	5.56	3.73	4.90	4.40
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	....	4.50
Baltimore	3.80	3.95	4.35	3.65	3.65	5.00	3.70	5.05	4.30
Norfolk, Va.	4.00	4.15	4.55	3.85	3.85	5.20	3.90	4.80	5.40
Buffalo	3.60	3.97	3.97	3.77	3.55	5.40	3.50	4.55	4.40
Pittsburgh	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.60	4.50
Cleveland	3.50	3.65	3.65	3.55	3.73	5.33	3.50	4.70	4.68
Detroit	3.68	3.83	3.83	3.75	3.80	5.42	3.58	4.65	4.74
Cincinnati	3.85	4.00	4.00	3.80	3.83	5.43	3.75	....	4.78
Chicago	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.45	4.50
Minneapolis	3.85	4.00	4.00	3.80	3.80	5.40	3.75	5.10	4.75
Milwaukee	3.73	3.88	3.88	3.68	3.68	5.28	3.63	4.58	4.63
St. Louis	3.87	4.02	4.02	3.82	3.82	5.42	3.77	4.72	4.77
Kansas City	4.15	4.30	4.30	4.10	4.10	5.70	4.10	....	4.75
Memphis	4.01	4.16	4.16	3.96	3.96	5.71	3.91	....	5.26
Chattanooga	3.90	4.05	4.05	3.85	3.85	5.80	3.80	....	4.40
Tulsa, Okla.	4.64	4.79	4.79	4.59	4.59	6.19	4.54	....	5.54
Birmingham, Ala.	3.50	3.65	3.65	3.45	3.45	5.83	3.40	....	4.75
New Orleans	4.10	4.65	4.65	4.00	4.00	5.95	4.25	....	5.15
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	4.20	....	5.25
Seattle	4.30	4.50	5.85	4.05	4.15	5.90	4.20	....	5.50
Portland, Oreg.	4.30	4.70	6.10	4.15	4.15	5.90	3.75	6.50	4.75
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.05
San Francisco	4.05	4.45	6.00	3.85	3.95	5.45	4.00	6.40	5.15

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed) 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars 2300	SAE Cold Drawn Bars 3100
Boston	3.61	4.43	4.28	7.65	6.25	6.00	8.05	8.73	7.33
New York	3.66	4.39	4.14	7.50	6.10	5.85	....	8.69	7.29
Philadelphia	3.66	4.36	3.85	7.46	6.06	5.81	8.71	....	....
Baltimore	....	4.35	3.95	..	....	..	..	....	....
Norfolk, Va.	....	4.60	....	....	....	....	....	....	....
Buffalo	3.57	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Pittsburgh	3.35	3.95	3.80	7.35	5.95	5.70	7.75	8.35	6.95
Cleveland	3.35	4.05	3.70	7.45	6.05	6.05	7.85	8.25	6.85
Detroit	3.55	4.10	3.83	7.57	6.17	5.92	7.39	8.55	7.15
Cincinnati	3.60	4.30	3.90	7.59	6.19	5.94	8.99	8.60	7.20
Chicago	3.65	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Minneapolis	....	4.64	4.00	7.60	6.20	8.79	9.34	8.94	7.54
Milwaukee	....	4.18	3.93	7.48	6.08	5.83	7.88	8.48	7.08
St. Louis	3.76	4.32	4.07	7.62	6.22	5.97	8.02	8.62	7.22
Kansas City	4.46	4.60	....	....	....	....	....	....	....
Memphis	....	4.61	....	....	....	....	....	....	....
Chattanooga	..	4.90	.	.	....	....	....	....	....
Tulsa, Okla.	....	5.09	....	....	.	..	....	....	....
Birmingham, Ala.	..	4.73	....	....	....	....	....	....	....
New Orleans	5.00	5.10	.	.	.	....	....	....	....
Seattle	....	5.60	5.65	....	7.80	7.65	8.45	....	....
Portland, Oreg.	....	5.60	6.10	9.00	8.00	7.85	8.70		
Los Angeles	4.45	6.60	4.65	9.40	8.55	8.40	9.05	10.40	9.55
San Francisco	*9.30	6.55	5.20	9.65	8.80	8.65	9.30	10.65	9.80

*Based on minimum quantity

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, Sept. 1

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, gross tons Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$26.73 5 10 0	$15.23	1 17 0
Basic bessemer	....	18.31	2 4 6
Hematite, Phos. .03-.05	31.59 6 10 0*	.....	.....
Billets	$38.27 7 17 6	$34.98	4 5 0
Wire rods, No. 5 gage	54.80 11 5 6	42.18	5 2 6
Standard rails	$49.21 10 2 6	$47.32	5 15 0
Merchant bars	2.39c 11 0 0	1.92c to 1.96c	5 2 6 to 5 5 0
Structural shapes	2.31c 10 12 6	1.81c	4 17 6
Plates, ¼ in. or 5 mm.	2.51c 11 11 3	2.10c to 2.28c	5 12 6 to 6 2 6
Sheets, black, 24 gage or 0.5 mm.	2.82c 13 0 0	2.70c	7 5 0°
Sheets, gal., 24 ga., corr.	3.63c 16 15 0	3.26c	8 15 0
Bands and strips	2.88c 13 5 0	2.04c	5 10 0
Plain wire, base	4.23c 19 10 0	2.28c to 2.70c	6 2 6 to 7 5 0
Galvanized wire, base	5.05c 23 5 0	2.92c to 3.03c	7 17 6 to 8 2 6
Wire nails, base	4.01c 18 10 0	2.60c to 2.79c	7 0 0 to 7 10 0
Tin plate, box 108 lbs.	$ 4.92 1 0 3	.....	.....

British ferromanganese $92.50 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d	French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si. 2.5	$26.49 5 9 0(a)	$16.27	598	$14.83	440	$25.24 63
Basic bess. pig iron	24.30 5 0 0(a)	.....	...	.....	...	27.84 (b) 69.50
Furnace coke	6.58 1 7 6	5.58	205	7.25	215	7.61 19
Billets	38.27 7 17 6	22.85	840	28.98	860	38.67 96.50
Standard rails	2.20c 10 2 6	1.38c	1,150	2.06c	1,375	2.38c 132
Merchant bars	2.65c 12 4 0††	1.30c	1,080	1.65c	1,100	1.98c 110
Structural shapes	2.39c 11 0 6††	1.27c	1,055	1.65c	1,100	1.93c 107
Plates, ¼-in. or 5 mm.	2.54c 11 14 3††	1.62c	1,350	2.06c	1,375	2.29c 127
Sheets, black	3.42c 15 15 0§	1.92c	1,600‡	2.36c	1,575‡	2.59c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	4.01c 18 10 0	2.70c	2,250	4.13c	2,750	6.66c 370
Plain wire	4.23c 19 10 0	1.99c	1,660	2.48c	1,650	3.11c 173
Bands and strips	2.81c 12 19 0††	1.45c	1,210	1.95c	1,300	2.29c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 69 per cent over paper sterling.

—The Market Week—

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	12.00
Bos. dock No. 1 exp.	11.50-12.50
New Eng. del. No. 1	13.00
Buffalo, No. 1	14.00-14.50
Buffalo, No. 2	12.00-12.50
Chicago, No. 1	13.50-14.00
Chicago, auto, no alloy	11.50-12.00
Chicago, No. 2 auto	10.50-11.00
Cincinnati, dealers	11.50-12.00
Cleveland, No. 1	13.50-14.00
Cleveland, No. 2	12.50-13.00
Detroit, No. 1	10.00-10.50
Eastern Pa., No. 1	14.00-14.50
Eastern Pa., No. 2	12.50-13.00
Federal, Ill.	12.00-12.50
Granite City, R. R.	12.50-13.00
Granite City, No. 2	11.50-12.00
Los Angeles, No. 1	11.50-12.00
Los Angeles, No. 2	10.00-10.50
N. Y. dock No. 1 exp.	†11.50
Pitts., No. 1 (R. R.)	16.00-16.50
Pittsburgh, No. 1	15.00-15.50
Pittsburgh, No. 2	14.00-14.50
St. Louis, R. R.	12.00-12.50
St. Louis, No. 2	11.50-12.00
San Francisco, No. 1	12.00
Seattle, No. 1	10.00-12.00
Toronto, dlrs. No. 1	9.00- 9.50
Valleys, No. 1	14.00-14.50

COMPRESSED SHEETS

Buffalo	12.00-12.50
Chicago, factory	12.75-13.25
Chicago, dealer	11.75-12.25
Cincinnati, del.	10.50-11.00
Cleveland	13.00-13.50
Detroit	11.50-12.00
E. Pa., new mat.	14.00-14.50
E. Pa., old mat.	10.00-10.50
Los Angeles	12.50-13.00
Pittsburgh	15.00-15.50
St. Louis	10.00-10.50
Valleys	13.50-14.00

BUNDLED SHEETS

Buffalo, No. 1	12.00-12.50
Buffalo, No. 2	11.00-11.50
Cleveland	10.50-11.00
Los Angeles	11.00-11.50
Pittsburgh	14.00-14.50
St. Louis	7.50- 8.00
Toronto, dealers	4.00

SHEET CLIPPINGS, LOOSE

Chicago	9.00- 9.50
Cincinnati, dealers	6.50- 7.00
Detroit	8.50- 9.00
†Los Angeles	3.75- 4.00
St. Louis	7.00- 7.50

BUSHELING

Buffalo, No. 1	12.00-12.50
Chicago, No. 1	12.50-13.00
Cincin., No. 1, deal.	6.50- 7.00
Cincinnati, No. 2	2.75- 3.25
Cleveland, No. 2	7.50- 8.00
Detroit, No. 1, new	11.00-11.50
Valleys, new, No. 1	13.00-13.50
Toronto, dealers	4.00

MACHINE TURNINGS (Long)

Birmingham	6.00- 7.00
Buffalo	6.50- 7.00
Chicago	6.50- 7.00
Cincinnati, dealers	4.00- 4.50
Cleveland	7.00- 7.50
Detroit	6.50- 7.00
Eastern Pa.	8.00- 8.50
Los Angeles	4.00- 4.25
New York	†3.50- 4.00
Pittsburgh	9.00- 9.50
St. Louis	4.00- 4.50
Toronto, dealers	4.25- 4.75
Valleys	9.00- 9.50

SHOVELING TURNINGS

Buffalo	8.00- 8.50
Cleveland	7.50- 8.00
Chicago	7.00- 7.50
Detroit	7.50- 8.00
Pittsburgh	9.50-10.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	2.00
Buffalo	7.00- 7.50
Cincinnati, dealers	3.50- 4.00
Cleveland	7.50- 8.00
Eastern Pa.	6.00- 6.50
Detroit	6.75- 7.25
New York	†2.50- 3.00
Pittsburgh	7.50- 8.00
Toronto, dealers	3.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	13.50-14.00
Eastern Pa.	10.50-11.00
St. Louis	9.00- 9.50
Toronto	5.00

CAST IRON BORINGS

Birmingham	6.00- 6.50
Boston dist. chem.	†6.00
Bos. dist. for mills	†6.00
Buffalo	7.00- 7.50
Chicago	6.00- 6.50
Cincinnati, dealers	3.50- 4.00
Cleveland	7.50- 8.00
Detroit	6.75- 7.25
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	4.25-4.75
Toronto, dealers	3.50

RAILROAD SPECIALTIES

Chicago	16.50-17.00

ANGLE BARS—STEEL

Chicago	15.50-16.00
St. Louis	14.50-15.00

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	16.50-17.00
Chicago, leaf	16.00-16.50
Eastern Pa.	16.50-17.00
Pittsburgh	17.00-17.50
St. Louis	15.00-15.50

STEEL RAILS, SHORT

Birmingham	14.00
Buffalo	17.00-17.50
Chicago (3 ft.)	16.00-16.50
Chicago (2 ft.)	17.00-17.50
Cincinnati, dealers	17.00-17.50
Detroit	16.50-17.00
Los Angeles	15.00-17.50
Pitts., 3 ft. and less	17.00-17.50
St. Louis, 2 ft. & less	14.50-15.00

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	16.00-16.50
Chicago	14.00-14.50
Cleveland	17.00-17.50
Pittsburgh	16.00-16.50
St. Louis	13.75-14.25
Seattle	16.00

FROGS, SWITCHES

Chicago	13.50-14.00
St. Louis, cut	13.50-14.00

ARCH BARS, TRANSOMS

St. Louis	15.00-15.50

PIPE AND FLUES

Cincinnati, dealers	6.25- 6.75
Chicago, net	8.00- 8.50

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	8.00- 8.50
Cincinnati, dealers	7.25- 7.75
Eastern Pa.	13.00-13.50
New York	†8.50- 9.00
St. Louis	8.50- 9.00

RAILROAD WROUGHT

Birmingham	11.00-11.50
Boston district	†9.50-10.00
Chicago, No. 1 net	9.50-10.00
Eastern Pa., No. 1	15.00-15.50
St. Louis, No. 1	10.50-11.00
St. Louis, No. 2	12.00-12.50
Toronto, No. 1 dlr.	10.00

FORGE FLASHINGS

Boston district	†6.75- 7.25
Buffalo	12.00-12.50
Cleveland	12.00-12.50
Detroit	9.00- 9.50
Los Angeles	9.00
Pittsburgh	13.00-13.50

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	16.50-17.00

LOW PHOSPHORUS

Buffalo, crops	16.50-17.00
Cleveland, crops	18.00-18.50
Eastern Pa., crops	16.50-17.00
Pittsburgh, crops	17.00-17.50

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	16.50-17.00
Eastern Pa.	17.00-17.50
Pitts. (light & hvy.)	14.50-15.00
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	16.00-17.00
Boston	15.50-15.75
Chicago	17.50-18.00
New York	†14.00-14.50
Eastern Pa.	17.00-17.50
St. Louis	16.50-17.00

STEEL CAR AXLES

Birmingham	16.00-17.00
Buffalo	16.50-17.00
Boston district	†16.00
Chicago, net	20.00-20.50
Eastern Pa.	21.50-22.50
St. Louis	18.50-19.00

LOCOMOTIVE TIRES

Chicago (cut)	15.50-16.00
St. Louis, No. 1	14.00-14.50

SHAFTING

Boston district	†14.25
New York	†15.00-15.50
Eastern Pa.	19.50-20.00
St. Louis, 1¼-3¾"	17.00-17.50

CAR WHEELS

Birmingham	14.00-15.00
Boston dist., iron	†11.00
Buffalo, steel	16.50-17.00
Chicago, iron	14.50-15.00
Chicago, rolled steel	15.50-16.00
Cincin., iron, deal.	13.75-14.25
Eastern Pa., iron	16.50-17.00
Eastern Pa., steel	16.50-17.00
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel	16.00-16.50
St. Louis, iron	13.00-13.50
St. Louis, steel	15.00-15.50

NO. 1 CAST SCRAP

Birmingham	13.00-13.50
Boston, No. 1 mach.	†11.00-11.25
N. Eng. del. No. 2	11.00-11.50
N. Eng. del. textile	12.50-13.00
Buffalo, cupola	14.50-15.00
Buffalo, mach.	15.50-16.00
Chicago, agri. net	11.50-12.00
Chicago, auto net	13.00-13.50
Chicago, railr'd net	11.50-12.00
Chicago, mach. net	13.00-13.50
Cincin., mach. deal.	12.25-12.75
Cleveland, mach. net	16.75-17.25
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard	13.50-14.00
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.00-15.50
San Francisco, del.	13.50-14.00
Seattle	10.00-12.00
St. Louis, cupola	11.75-12.25
St. L., No. 1, mach.	14.00-14.50
St. Louis, agr. mach.	12.50-13.00
Toronto, No 1, mach., net	11.00-12.00

HEAVY CAST

Boston dist. break.	†10.75
New England, del.	†12.50-13.00
Buffalo, break.	11.00-11.50
Cleveland, break. net	13.00-13.50
Detroit, auto net	11.50-12.00
Detroit, break.	9.50-10.00
Eastern Pa.	15.50-16.00
Los Ang., auto, net	13.00-13.50
New York, break.	†11.00-11.50
Pittsburgh, break.	13.00-13.50

STOVE PLATE

Birmingham	8.00- 8.50
Boston district	†8.00- 8.25
Buffalo	13.00-13.50
Chicago, net	10.00-10.50
Cincinnati, dealers	7.25- 7.75
Detroit, net	8.50- 9.00
Eastern Pa.	13.00-13.50
New York, fdy.	†10.00-10.50
St. Louis	10.00-10.50
Toronto, dealers, net	7.50- 8.00

MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del.	14.50-15.00
Buffalo	13.50-14.00
Chicago, R. R.	15.50-16.00
Cincin., agri. deal.	11.75-12.25
Cleveland, rail	15.00-15.50
Eastern Pa., R. R.	15.50-16.00
Los Angeles	17.50-18.00
Pittsburgh, rail	14.50-15.00
St. Louis, R. R.	12.50-13.00

Iron Ore

Lake Superior Ore

Gross ton, 51½ % Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-10.00
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	13.00
Swedish low phos.	13.00
Spanish No. Africa basic, 50 to 60% nom.	12.00
Tungsten, sh. ton. unit, duty pd. nom.	$21.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$24.50-25.50
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52%	nom. 35.00
so. African, 50-52%	nom. 35.00
Indian, 50-52%	Nominal

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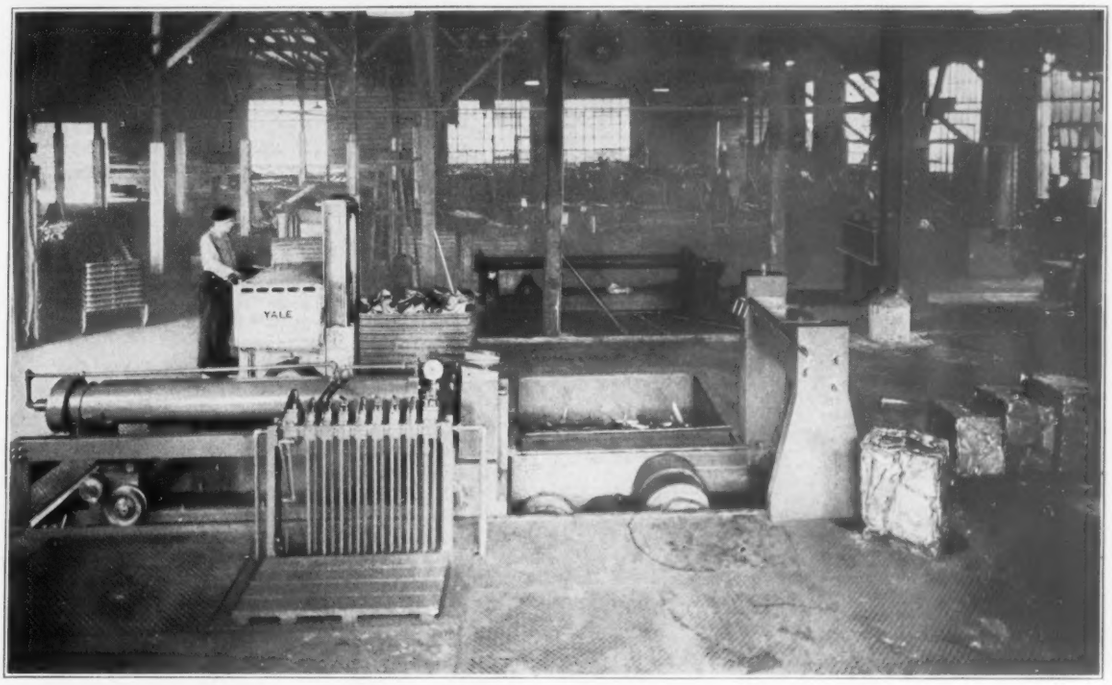
Scrap Balers



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Please state character of scrap, daily tonnage and range of gauges, when writing.

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Sheets

Sheet Prices, Page 70

Pittsburgh — Continued diversification of orders is the brightest spot in the sheet market. The tonnage is continuing its upward climb unaided by large placements of automotive sheets, and is being supported mainly by increasing size of orders from a wide variety of sources.

Initial orders have been placed by auto builders and the first releases are appearing. In some cases releases have been larger than anticipated.

Sheet production is going steadily ahead. Production of common and full finished sheets was steady last week at slightly over 40 per cent, but galvanized sheet production moved up two points to 58 per cent. Both hot and cold strip production increased to about 30 per cent of capacity.

Cleveland — Miscellaneous users continue to bolster the sheet market and further seasonal improvement is predicted in September. Requirements from auto builders has slackened after the initial purchases a week or two ago. Large tonnage specifications from this source are not expected until the latter part of the month. Little forward buying has developed with specifications representing only actual needs and requesting prompt delivery.

Chicago — Sheet sales continue to show moderate gains with miscellaneous users still providing the chief support. Automotive sheet business continues relatively light, heavier buying awaiting the start of new model assemblies by additional motor car interests. In the meantime some automotive partsmakers are taking larger tonnages. Galvanized sheets continue relatively active. Prospects for moderately good demand in farm districts are favorable, and jobbers who permitted stocks to decline are taking somewhat larger lots in anticipation of fall business.

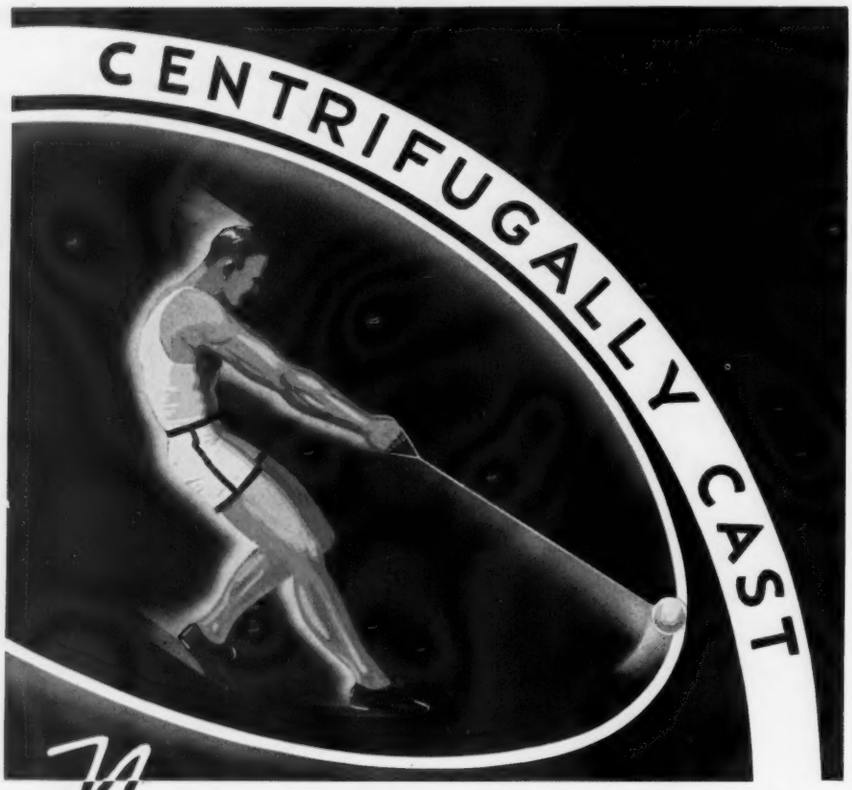
Boston—Fill-in buying by jobbers with scattered, but slightly improved demand from miscellaneous sources, brought sheet tonnage last month just ahead of July with most sellers. Blue annealed make relatively the best showing with small tank fabricators more active. Stamping shops are still operating lightly. While small individually, orders for alloy and stainless sheets tend upward.

New York — With business in August slightly improved sheet sellers anticipate further gain in September. A greater diversification of manufacturing requirements is noted and the contraseasonal trend in building is expected to continue through next month. Jobber stocks are being replenished somewhat more freely.

Manufacturers of household appliances are becoming more active in building stocks for the holiday trade. There is even a slight stir in electric refrigerator requirements, which have been at a virtual standstill since early last spring.

Manufacturers of household ap- for building showed an increase in August and with several important projects active, including notably the Metropolitan Life Insurance Company's project, for which miscellaneous items of steel are being purchased by subcontractors. Two other large housing projects now being figured are the Red Hook and Queens Bridge jobs, with their sheet requirements to develop this fall.

Philadelphia — Some sheetmakers estimate August releases at about 10 per cent greater than in July, with auto body tonnages near the close of the month contributing. Specifications from stove and radio



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makers are showing a seasonal gain. Jobbers are specifying slowly. The trade looks for no change in prices for fourth quarter, except possibly minor adjustments.

Buffalo — Although still restricted, an increase is noted in demand for sheets from automobile manufacturers and accessory makers. August sheet bookings were the best for the year. A further gain in business is expected as inventories of consumers are obviously low.

Demand for hot and cold-rolled strip is gradually expanding, due principally to a better flow of small-lot orders and the start of automotive inquiries.

Cincinnati — Sheet mills in this district have been operating at 40 to 45 per cent of capacity for some time, with ingot production at about 65 per cent, the surplus going into stock. With automobile demand in small volume general buying has been holding the market steady. Consumers buy often and ask immediate shipments, holding inventory at a minimum. Galvanized sheets are most active grade.

St. Louis — Reversing the usual seasonal trend, sheet business this month is slightly larger than during the similar period in July. Requirements of refrigerator makers have been well sustained, and demand from furnace manufacturers is considerably in excess of expectations. Makers of household appliances, including washing machines, steel cupboards, etc., report betterment in actual business and prospects for the fall and winter. Galvanized sheets are moving in fair volume.

Birmingham, Ala. — Somewhat reversing the picture from last week, roofing sheets have stepped into prominence this week. Manufacturers' sheets, however, remain in fairly good demand and production schedules are being satisfactorily maintained.

Strip

Strip Prices, Page 71

Cleveland — Consumers of hot and cold-rolled strip continue to take increasing volume of tonnage. The most marked improvement has originated from stamping concerns serving the automotive industry.

Chicago — Strip business still is handicapped by lack of more active demand from the automotive industry, but this is expected to be corrected shortly since an upturn in motor car assemblies is scheduled. Small gains are noted in needs of some miscellaneous consumers.

Boston — Encouraged by substantial improvements in business last month, producers of narrow cold strip look for further gains in September. August was the best month of the year with some sellers. Orders, well diversified, are still small individually, although tending to be heavier per shipment. Releases by automotive partsmakers are gaining and demand from makers of household appliances has been upward for some time. With few exceptions industrial consumers of strip are buying in better volume.

New York — Increased volume of narrow cold strip orders reflects low inventories held by consumers. Tonnage per order tends upward with prompt delivery specified. Demand is well diversified from a greater number of manufacturing consumers. Household appliance makers are taking in more strip and releases to the automobile trade, mostly parts makers, are heavier.

Philadelphia — Specifications for hot and cold-rolled strip showed a gain in August and while holiday influences have brought a lull buying is expected to be resumed after Labor Day.

St. Louis — Strip purchasing is

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holding up well, with demand principally from miscellaneous users. Makers of hand implements account for fair tonnages, and improvement is noted in demand through the building industry. The larger consuming industries have not increased buying.

Birmingham, Ala. — Thanks to cotton ties, the Southern district's production in strip is consistent again this week and even above, probably that of last week as the cotton season gets more fully under way.

Plates

Plate Prices, Page 70

Chicago — While the outlook for better plate demand is aided by increasing activity in fabrication of buildings, bridges and tanks, only a moderate tonnage is looked for in the near future from railroads. The fact that car repairs have been deferred for a number of months, however, leads to expectations that there will be some increase this fall. Plate shipments to railroads have shown practically no increase the past 60 days in contrast to rising activity in business elsewhere. The outstanding item of pending freight car business is 1000 box cars for the Illinois Central.

Pittsburgh — Plate tonnage is contributing an important share to steel mills, barge building taking considerable and structural fabricators even more. Government projects are also using much plate and bookings for this purpose are on the increase. Buying by tank and boiler builders continues in steady volume though not at a high rate.

Boston—More metalworking shops consuming plates are busier, but boiler work is scarce and structural shops lag. Small tank fabricators, however, are more active. New England shipyards are releasing some good orders, but not for several months will most of heavy tonnage required be ready for plate mills. This tonnage will be spread over a long period. Railroads are taking only shipments urgently needed.

New York — More encouragement is found in the market for steel plates. Distribution of about 8000 tons for 30 all-welded steel barges for the city of New York is to be made shortly. Railroads are undertaking enlarged car repair programs, the New York Central project being the largest in this district, involving 1300 cars and 185 locomotives. Demand by boiler makers is slow and the oil industry is specifying lightly, in much less volume than during first half. Considerable plate tonnage is being taken by builders of machine tools as their volume of orders shows increase.

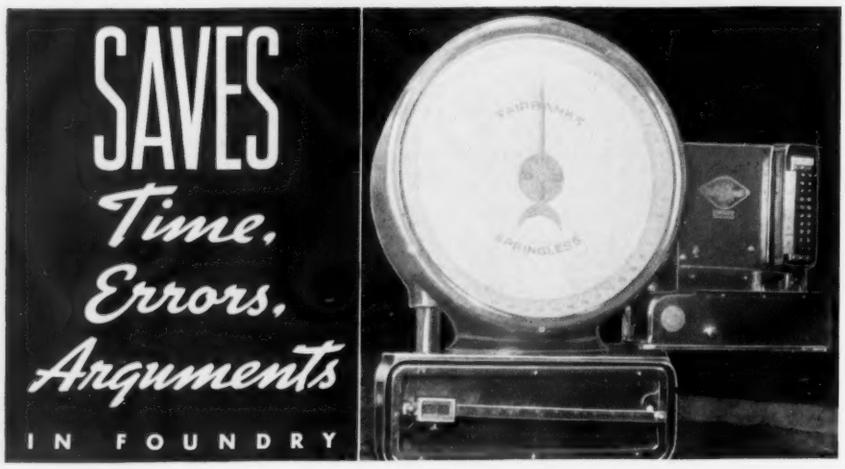
Philadelphia — While platemakers in this district expect an increase in demand in September no decided upturn is looked for until later in the fall. Ship releases have been an important sustaining factor in recent weeks. Sun Oil Co. is figuring on pressure vessels for Marcus Hook, Pa., and Toledo, O. Philadelphia water bureau has opened bids on about 300 tons of welded steel pipe, mainly 24-inch, with some 16 and 20-inch.

Birmingham, Ala. — While somewhat below last week plates remain in comparatively good demand here. Quite a tonnage already booked is being worked off, and some additional buying in scattered lots is reported.

San Francisco — Most new plate inquiries are confined to lots of less than 100 tons. So far this year 24,955 tons have been booked, compared with 31,646 tons for the corresponding period in 1937.

Seattle—Inquiry is more active,

PRINTOMATIC SCALE—



● Men who clean and finish castings in the Whitin Machine Co., Whitinsville, Ohio, place them in a metal pan, along with an identifying ticket. The pan of castings is carried on a conveyor to a Fairbanks scale equipped with a Printomatic attachment. When the pan approaches the scale, the operator releases a foot lever which permits but one pan at a time to rest on the scale, inserts the identifying ticket, presses a button, and the correct weight is automatically *printed* on the ticket. There are no errors in reading — none in recording. Approximately 1000 weighings per day are accomplished speedily and with absolute fairness to both company and men.

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Scales

shops reporting considerable upturn. Puget Sound Machinery Depot, Seattle, has been awarded 2500 tons involved in forty 102-inch outlet conduits for the Coulee dam project. The contract calls for welded 5/8 and ¾-inch plate. Steel Tank & Pipe Co., Portland, will construct a 15,000-barrel storage tank for the Texas Co's. Seattle terminal, tonnage unstated. Union Oil Co. plans construction of three storage tanks at its Tacoma terminal, bids soon.

Plate Contracts Placed

2500 tons, forty 102-inch outlet conduits, Coulee dam project, to Puget Sound Machinery Depot, Seattle.

110 tons, nun and can buoys, lighthouse bureau, Staten Island, N. Y., to United Welding Co., $7711.62; Bressler Metal Works, $6827.75 and Tippett & Wood, Philipsburg, N. J., $4535.90, bids July 25, pro. 57,282.

Unstated, 15,000-barrel storage tank for Texas Co., Seattle terminal, to Steel Tank & Pipe Co., Portland, Oreg.

Unstated, tanks and digesters disposal plant Ellensburg, Wash., to Dorr Co., Los Angeles.

Unstated tonnage, 100 sections, 12-foot lengths, 20-inch i.d. steel shore pipe for dredge MORGAN, to Gaynon Iron Works, Jacksonville, Fla.; bids Aug. 18, United States engineer, Savannah, Ga.

Plate Contracts Pending

900 tons, survey ship for United States coast and geodetic survey, Washington; bids Oct. 7.

Unstated tonnage, 300,000-gallon elevated steel tank, Chanute field, Rantoul, Ill.; bids in.

Unstated tonnage, 150,000-gallon elevated water tank, Ogden ordnance depot, Ogden, Utah; bids in.

Unstated, three storage tanks at Tacoma, Wash., for Union Oil Co.; bids soon.

Bars

Bar Prices, Page 70

Pittsburgh — Bar markets here have shared to only a small extent in the upswing noted in steel demand. There has been a continuance of the current market tone, with orders small and well diversified but expected improvement has not materialized.

The major reason is that auto tonnages have not yet been placed in any substantial amounts. Buying was expected at least by the end of August, but failed to come through.

Cleveland — Producers of carbon and alloy steel bars report continued improvement in specifications. New business during August is said to have exceeded July by as much as 25 per cent. Little of this tonnage represented forward buying as indicated by request for prompt delivery in most instances. Prices are firm.

Chicago — Steel bar demand, recently well sustained, gives promise of further expansion. Additional automotive buying is imminent and some farm implement manufacturers plan to increase schedules during the next few weeks. Miscellaneous consumers constitute the backbone of recent business. Forging shops are busier, most improvement arising from sources other than automotive.

Boston—While bar demand sagged just previous to the holiday, resumption of the slow, but gradual upturn which developed about mid-August, is expected this month. Buying covers a wide range of bar specifications for prompt delivery by diversified consumers, with most larger users taking in little stock, notably railroads. Shipyards are releasing alloy bars in good volume and the Watertown, Mass., arsenal has closed on 350 tons of carbon steel.

Philadelphia — Government specifications are stimulating demand for cold-drawn and hot alloy bars with better inquiry from machinery and mill equipment makers. Plain carbon bar tonnage is expanding slowely.

New York — Cold-drawn and hot

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Short & Sweet

■ If you have been around a newspaper office much or seen any of those movies glorifying the star reporter you are probably acquainted with the charge of *who, why, what, when* and *where*. A story without these essential points covered is just no story at all. Well, last week on the front page of *The Cleveland Press* the perfect newspaper story appeared. Every one of the five commands was answered. It was, to put it mildly, a humdinger and it showed a lot of research and understanding on the part of the reporter, who will no doubt win a Pulitzer prize or a package of Wheaties. The world's shortest and most perfect story read:

Vesuvius Erupts

Naples, Aug. 31. Vesuvius erupted today.

Do You Have Yours?

■ Hundreds of copies of this week's STEEL have an attractive little routing slip pasted on the front cover. STEEL, you know, furnishes them free of charge to any subscriber. All the readers are listed on the slip and the copy can then be passed along without delay and everyone is sure of seeing it. A faithful user of this service is the Golden Gate Iron Works out in San Francisco. Last week their supply was shrinking so they sent along a request for more (accompanied by their $6.00 check for two more years of STEEL). But they are tired of such prosaic titles as Pres., Ch. Eng., P. A., etc. so instead the new slips will read like the italic type below:

The Boss—just start something and you'll find out.

Head Man—tries to run everyone else's business.

Nut Cracker—has to steer the Joe McGees in the right path.

Fireman—not yet a full-fledged engineer.

Brains—always takes ten minutes to figure a way to save five minutes on a job.

Glorified Office Boy—talks a good job; if he quit we'd have to close up.

The added comments (as you can well imagine) came from the *Brains* who thought of this whole thing.

New Oldster

■ Bird & Sons, Inc. no longer holds our title as the oldest manufacturer in the country. They were quickly displaced by Ames Baldwin Wyoming Co., with executive offices at Parkersburg, W. Va. H. C. Brown, Jr., plant manager at the North Easton, Mass., works (only 10 miles from oldster Bird) sends along proof that his company has been making shovels since two years before John Hancock scrawled his name below the Declaration of Independence. Ames shovels dug the trenches at Bunker Hill and in the World War millions were used on the Allied Front. Now, what company saw the light of day before 1774?

Real McCoy

■ Allegheny County, Pa. is celebrating its Sesqui-Centennial from Sept. 16 to 20 and one of the high spots will be an historical pageant, "The Workshop of the World". The grand finale is an industrial scene and in order to get the right flavor to it an accompaniment of mill noise will be used. Technicians from KDKA used the Homestead plant of Carnegie-Illinois as the "laboratory" and recorded sounds of an open hearth being charged, the rolls of a slabbing mill and the hum of pump and power houses. It's all going to work out very swell unless they got too many of the *real* sounds on their records. It might be a little embarrassing for the old man if his wife recognizes his voice above the roar of that slabbing mill, calling that helper of his a # &*** (% @.

—SHRDLU

alloy bar specifications are expanding. Machine tool and equipment builders are more active and automobile accessory makers are beginning to reflect the inauguration of 1939 programs by automobile builders.

Government specifications are more numerous and shipyard releases are improving.

Common merchant bars are also experiencing a lift, but relatively not as much as cold drawn and alloy bars.

Buffalo — The gradual improvement in bar orders is being extended, with principal consumers reporting backlogs sufficient to quicken rolling schedules. A light flow of orders from automotive partsmakers is encouraging, although substantial buying from motor sources has not appeared.

Birmingham, Ala. — Little other than concrete reinforcing bars is being produced. Tonnage in that specification, however, is quite satisfactory.

Pipe

Pipe Prices, Page 71

Pittsburgh — Gradually increasing orders for all kinds of tubular goods are being received, all classifications participating in the larger volume. Enlarged construction activity has brought more orders for standard black and galvanized pipe and oil country goods are moving better than in the summer. Boiler tubes show only slight revival after being the least active tubular product.

Cleveland — Steel pipe requirements out of jobbers' stocks are somewhat limited, due to the lack of normal demand from industrial expansion and repairs. The picture in the cast iron pipe market offers considerable more encouragement. With federal aid, many small municipalities are pushing through plans to improve water works distribution systems and similar work. Recent awards include 200 tons of cast pipe for a complete new water plant at Mt. Pleasant, O., to J. B. Clow & Son Co., Cleveland. The outstanding pending project includes approximately 730 tons of 24-inch cast pipe for the city of Sandusky, for which bids are due Sept. 7.

Chicago—This city is taking bids until Sept. 6 on approximately 282 tons of 24 and 30-inch cast iron pipe and 6.2 tons of fittings. Distribution of 4375 tons for the local park district is expected to be made shortly by Allied Bridge & Construction Co., Chicago, recently awarded the general contract. A substantial ton-

nage of cast pipe is pending and in prospect elsewhere, with PWA funds the principal factor.

Boston — Following brisk buying, cast pipe demand has declined in volume, although small-lot purchasing is active. Releases against orders are substantial and the district foundry continues operating five days weekly. Stocks of some smaller sizes are depleted. Outstanding inquiry involves several hundred tons for Lanesville, Mass.

New York — Several sizable jobs are pending in steel pipe, although recently few new important tonnages have appeared. Outstanding are several thousand tons still to be placed for the Metropolitan Life housing project, for which 4000 tons have already been let. Additional housing work is likely to furnish a further heavy tonnage over the next several weeks.

With current cast pipe buying limited to small fill-in lots, bids on close to 2600 tons for Watervliet, Cortland and Croton-on-Hudson, N. Y., are in, part of the tonnage to be placed through contractors. Several hundred tons are also required for water extensions at Hempstead, N. Y. Alco Products Co. booked 435 tons of steel pipe, for the Jerome avenue water line, New York, the cast pipe and fittings going to Warren Foundry & Pipe Co.., Linn Avenue Construction Co., New York, general contractor.

Birmingham, Ala. — While not immediately evident, considerable business in cast iron pipe is in the making, most of it from government agencies and with some increase in inquiries from municipalities and public utilities.

San Francisco — Awards of cast iron pipe were the third largest for any week this year and totaled 2227 tons. This brought the year's aggregate to 22,118 tons, compared with 19,982 tons for the same period a year ago. Pacific Bridge Co. secured the general contract for an under water line from San Francisco to Alcatraz Island at $225,000. The work calls for 11,000 feet of 8-inch steel pipe ½-inch thick, placed with an unnamed interest.

Seattle — As PWA approves proposed water system projects, demand for cast iron items is rapidly increasing. Sales in the next three months will be heavy. La Grande, Oreg., will receive a PWA grant for proposed $176,700, water main replacement program. Eugene, Astoria, Columbia and Douglas counties, Oregon, have filed applications for PWA funds to promote improvements ranging from $25,000 to $250,000. Everett, Wash., will receive funds for a $169,023 improvement project. Albion, Lind, Marysville and Lynden, Wash., has each filed application for PWA funds for extending water systems.

Cast Pipe Placed

1660 tons, 4 to 20-inch, Tacoma, Wash., to United States Pipe & Foundry Co., Burlington, N. J.

300 tons, 4 to 16-inch, South Pasadena, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

100 tons, 12-inch, Price, Utah, to Pacific States Cast Iron Pipe Co., Provo, Utah.

Steel Pipe Placed

11,000 feet, 8-inch, ½-inch steel pipe, under water line from San Francisco to Alcatraz island, Calif.; general contract to Pacific Bridge Co., San Francisco at $225,000.

400 tons, principally 36-inch with some 48-inch steel pipe for Jerome avenue water supply project, New York, to Alco Products Inc. through Linn Avenue Construction Co., Yonkers, N. Y.

Cast Pipe Pending

15,000 tons, 6, 30 and 48-inch for Sebago Lake-Portland, Oreg., water system, with alternates on steel.

1400 tons, six and 12-inch, Narragansett, R. I.; alternates on cast iron, steel and concrete.

825 tons, 6 and 12-inch, Pacific Colony, Spadra, Calif.; bids Sept. 13.

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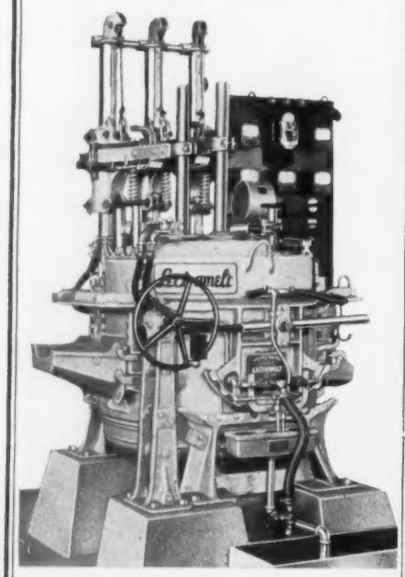

Illustration shows new 500 pound capacity 3 phase direct arc LECTROMELT furnace installed in jobbing steel foundry.

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730 tons, 7300 feet of 24-inch, new intake, Sandusky, O.; bids Sept. 7.
350 tons, 12-inch (alternate transite) for Tacoma, Wash.; Acme Construction Co., Seattle, low.
298 tons, Jamison canyon pipe line near Cordelia, Calif., for Vallejo, Calif.; bids Sept. 3.
282 tons, 4 to 12-inch, Tucson, Ariz.; bids Sept. 6.
282 tons, 24 and 30-inch pipe, 6.2 tons fittings, Chicago; bids Sept. 6.
240 tons, water distribution system, Smithfield, O.; bids Sept. 10.
Unstated tonnage, two minimum carloads of 6-inch and five minimum carloads of 8-inch centrifugal water pipe, Appleton, Wis.; bids closed Sept. 1.
Unstated tonnage, $175,000 waterworks and sewerage system, Milton Junction, Wis.; application made for PWA grant.

Wire

Wire Prices, Page 71

Pittsburgh — Wire and wire products form the most active market at present, a preview of the fall season. Jobbers are accumulating stock from expected farm demand, which has started in the South. Production is about 60 per cent.

Cleveland — Requirements for manufacturers' wire and certain merchant items continue to register encouraging gains. Jobbers' stocks are satisfactorily balanced to supply current needs and the rate of inventory turnover continues to improve. Demand from automotive suppliers has registered the most impressive gains.

Chicago—Business in manufacturers' wire continues to show small gains, offsetting to a large extent the seasonally quiet market in merchant wire products. Miscellaneous users have been the principal support to business lately but some sizable tonnage for motor car needs are ready to be placed.

Boston — Well diversified and expanding demand for wire and wire products is accompanied by better buying of rods. Manufacturers' wire and most specialties are moving in fair volume, consumer needs covering a wide variety of products.

New York — Orders for wire, covering a wider range of products, are more numerous, with individual releases heavier. Tonnage booked in August was considerably above July with indications incoming volume will gain further momentum this month. Demand for spring wire from the furniture trade is active with some improvement noted in buying of heavier and electrical goods. Rod buying has also gained. John A. Roebling's Sons Co., Trenton, N. J., will supply 320 tons of wire rope cable for suspenders, center span, Manhattan bridge, New York.

Birmingham, Ala. — Notable increases have developed over the past week in demand for wire products, which have for several weeks lagged considerably. No particularly large tonnages are booked, but dealer and jobber buying has stepped up considerably.

Rails, Cars

Track Material Prices, Page 71

Approval by the interstate commerce commission of a bank loan of $5,000,000 to the New York Central assures early inquiry for 28,600 tons of rails, plus accessories, with bids probably set for the first week of October. Loan also will provide steel for repairs to 1000 freight cars, 300 passenger cars and 185 locomotives.

American Car & Foundry Co., New York, has booked twenty-five 10,000-gallon tank cars for the chief of army engineers, Washington, at a unit price of $2528 each. The original inquiry called for bids on alternates of 5, 10, 15, 20, 25, 30 and 35 cars. American Car & Foundry Co. was low on certain of these alternates and General American Tank Car Corp., Chicago, the only other bidder, was low on the others. Apparently the 25 cars are all that will be purchased at this time.

Domestic freight car awards in August totaled 182 cars, bringing awards for eight months to 8123, against 48,583 in the corresponding period of 1937. Further comparisons follow:

	1938	1937	1936	1935
Jan.	25	17,806	2,050	24
Feb.	109	4,972	6,900	806
March....	680	8.155	632	0
April.....	15	9,772	4,427	350
May.....	6,014	4,732	8,900	2
June.....	1,178	548	5,200	5,151
July.....	0	1,030	7,229	500
Aug.	182	1,475	225	200
8 mos.	8,203	48,583	35,563	7,033
Sept.	.....	1,216	1,750	875
Oct.	.....	1,355	2,210	1,250
Nov.	.....	275	1,550	100
Dec.	.....	275	23,450	10,050
Total .	.....	51,611	64,643	19,308

Car Orders Pending

Illinois Central, 1000 box cars; bids asked.

Car Orders Placed

Bessemer & Lake Erie, 100 fifty-ton high tensile low alloy steel box cars leased from Pullman-Standard Car Mfg. Co., Chicago, with option to buy.
J. M. Huber Inc., New York, four 40-ton hopper cars to American Car & Foundry Co., New York.
Chief of engineers, United States army, war department, 25 railroad tank cars, 10,000-gallon capacity each, to Ameri-

can Car & Foundry Co., New York, at $2528 each; bids Aug. 16. pro. 7.

Inland Lowers Minimum On Rails to 200 Tons

Inland Steel Co., Chicago, announces reduction from 500 to 200 tons as the minimum tonnage at the base price, effective Sept. 1. The former minimum of 500 tons was established when large rail tonnages were the rule and an extra was applied to lots under 500 tons. Present conditions of railroad buying bring many lots of less than this size, for needed replacements, and the former minimum is regarded as too high.

Shapes

Structural Shape Prices, Page 70

New York — Gradually mounting structural steel inquiry includes 7000 tons, elevated highway Forty-fifth to Sixty-fourth road, Queens, N. Y., bids Sept. 6, with close to 30 contractors estimating. Steel will be bought by the contractor. Contracts covering close to 10,000 tons in the New York district include 6275 tons for a subway, section 9, route 110, Brooklyn. Piling contracts are heavier, 3900 tons having been placed, including requirements for bulkheads on the Jersey coast and the East side drive project, Manhattan.

Orders for fabricated structural steel booked during July showed a slight decrease from June, according to reports received by the American Institute of Steel Construction Inc., New York. However, the July orders were well above the monthly average during first half, indicating a sustained improvement in the volume of new business. Shipments during June also recorded a slight decline from June. Totals for July were: Bookings, 87,154 tons; shipments, 81,267 tons.

Pittsburgh — Shapes are moving with good tonnages at present. The heavy shape market is accounting for a large share of the steel tonnage being rolled here. There are few new privately financed jobs in the lists this week. However, most new work is on public projects, although the railroads are announcing new structural projects in fair numbers.

Cleveland—Requirements for fabricated structural steel continue to gain in volume, due primarily to increased expansion of publicly sponsored projects. Bethlehem Steel Co., Bethlehem, Pa., recently booked approximately 500 tons of sheet piling for the coast guard station, Cleveland. Addition to Case school, Cleveland, involving 250 tons was awarded to Austin Co., Cleveland, through Sam W. Emerson Co., Cleveland, general contractors. Fabricated prices remain spotty.

Chicago—Fabricated shape inquiries are fairly steady, with larger tonnages anticipated for various PWA projects. Both inquiries and awards still depend to a large extent upon public work. Recent orders are headed by 1166 tons for a bridge at Bloomfield, Ind., for the Big Four railroad.

Boston — Structural contracts are fewer, 1325 tons for buildings, Fairfield state hospital, Newtown, Conn., being outstanding. Other awards are for small lots, including a school, South Norwalk, Conn., to Bethlehem Steel Co., and several bridges, 100 to 150 tons each. Inquiry tends upward with public works predominating. Fabricated structural steel prices continue soft under pressure by shops for tonnage.

Philadelphia — Structural activity is confined mainly to small public jobs, with recent buying light. Strong competition is instrumental in maintaining low fabricated prices. Fabricators are figuring on the following Navy work: 300 tons, Sewell Point, Va.; 350 tons, Charleston, S. C.; and 500 tons, Norfolk, Va.

Buffalo — Sentiment in the structural shape market showed a decided improvement. Prospective work for fabricators has been piling up with the announcement of bidding dates on several substantial jobs. Although most jobs are backed by government financing a few private industrial awards are also in prospect.

St. Louis — The outstanding award went to the American Bridge Co., Pittsburgh, involving 1500 tons for the army hangar at Scott Field, Belleville, Ill. Lettings for private

Shape Awards Compared

	Tons
Week ended Sept. 3	**26,428**
Week ended Aug. 27	**22,378**
Week ending Aug. 20	**36,348**
This week, 1937	**21,387**
Weekly average, year, 1937	**23,251**
Weekly average, 1938	**17,608**
Weekly average, August	**28,101**
Total to date, 1937	**925,626**
Total to date, 1938	**633,915**

Includes awards of 100 tons or more.

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enterprises are lacking, but public works projects loom heavily. Fabricating yards are operating at about 40 per cent of capacity.

Birmingham, Ala. — While somewhat less active than the preceding week, output of structural shapes is holding fairly consistently.

San Francisco — Structural awards placed to date is 93,344 tons, compared with 120,224 tons last year. Bethlehem Steel Co. took 340 tons for two hangars at the naval base, San Diego, Calif. Pending business calls for close to 42,000 tons.

Seattle — Fabricating shops are swamped with specifications, important tonnages have been placed and several large projects are up for bids. Shapes continue to lead all steel items in activity. Bethlehem Steel Co., Bethlehem, Pa., has booked two jobs at Puget Sound navy yard, 1600 and 400 tons respectively. In addition to large tonnages for the Narrows bridge, Bonneville transmission towers and gates for the graving dock at Puget Sound navy yard.

Shape Contracts Placed

6275 tons, subway, section 9, route 110, Brooklyn, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; George H. Flinn Corp., New York, general contractor.

1525 tons, plant addition, Sheffield Farms, West 57th street, New York, to Bethlehem Steel Co., Bethlehem, Pa.

1500 tons, army hangar, Scott Field, Belleville, Ill., to American Bridge Co., Pittsburgh.

1400 tons, steel sheet piling, bulkhead and steel core jetties, Long Branch, N. J., to Carnegie-Illinois Steel Corp., Pittsburgh.

1337 tons, Cloverleaf development, near Brecksville, O., to Bethlehem Steel Co., Bethlehem, Pa.; through Hunkin-Conkey Construction Co., Cleveland.

1166 tons, Big Four railroad bridge, Bloomfield, Ill., to Vincennes Steel Corp., Vincennes, Ind.

952 tons, stables, shops and guard quarters, Fort Bliss, Texas, to Darbyshire Harvie Iron & Machine Co., El Paso, Tex.; H. T. Ponsford & Sons, El Paso, general contractor at $124,700, bids Aug. 4.

910 tons, continued treatment buildings, Fairfield state hospital, Newtown, Conn., to Ingalls Iron Works, Birmingham; F. H. McGraw & Co., Inc., Hartford, Conn., general contractor.

800 tons, jetty work and bulkhead, Deal, N. J., to Carnegie-Illinois Steel Corp., Pittsburgh.

760 tons, state viaduct, Westmoreland county, Pennsylvania, to American Bridge Co., Pittsburgh.

700 tons, steel sheet piling, East river drive project, New York, to Carnegie-Illinois Steel Corp., Pittsburgh; Merritt-Chapman & Scott, New York, general contractor.

645 tons, bridge FAP-537-D, Guadalupe county, Texas, to Virginia Bridge Co., Roanoke, Va.

600 tons, steel sheet piling, bulkhead wall, Agusta, Ga., to Bethlehem Steel Co., Bethlehem, Pa.; MacDougald Construction Co., Atlanta, Ga., general contractor.

500 tons, sheet piling, coast guard station, Cleveland, to Bethlehem Steel Co., Bethlehem, Pa.

460 tons, public school 64, Ozone Park, Queens, N. Y., to Lehigh Structural Steel Co., Allentown, Pa.; through procurement division, treasury department, New York, bids Aug. 23.

340 tons, extension to hangar No. 1 and new hangar No. 2, specification 8936, naval base, San Diego, Calif., to Bethlehem Steel Co., Los Angeles.

320 tons, state highway bridge, project RC-3980, Lisle Village, Broome county, New York, to Lackawanna Steel Construction Co., Inc., Buffalo; Strong Construction Co., Whitney Point, N. Y., general contractor at $89,615.05, bids Aug. 9, Albany.

300 tons, machine shop, R. Steel & Sons, Long Island City, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; Brown & Matthews, New York, general contractors.

286 tons, Rock Island railroad bridges, Marseilles and Seneca, Ill., to American Bridge Co., Pittsburgh.

280 tons, Panama, schedule 3371, class 3, to Bethlehem Steel Export Corp., Bethlehem, Pa., bids Aug. 5.

280 tons, mens apparel building, Worlds fair, New York, to Ingalls Iron Works, Birmingham, Ala.; through Wood & Hagen, New York, general contractors.

270 tons, supporting condensers and exchangers, Sun Oil Co., Marcus Hook, Pa. to Belmont Iron Works, Eddystone, Pa.

265 tons, subway, Washington, Iowa, to Bethlehem Steel Co., Bethlehem, Pa.

260 tons, state highway bridge FAP-773, Griswold, Iowa, to Clinton Bridge Works, Clinton, Iowa.

250 tons, addition to Case school, Cleveland, to Austin Co., Cleveland.

250 tons, additions, Hercules Powder Co., Parlin, N. J., to American Bridge Co., Pittsburgh.

225 tons, power house, U. S. Tobacco Co., Nashville, Tenn., to Nashville Bridge Co., Nashville.

215 tons, hospital, Grass Valley, Calif., to Judson-Pacific Co., San Francisco.

215 tons, bridge FAP-FAS-32, Karnes, Bee and Oak counties, Texas, to Peden Steel Co., Raleigh, N. C.

187 tons, bridge, Springer, New Mex., to unnamed interest.

180 tons, bridge No. FAP-243-J, Pagosa Springs, Colo., to unnamed interest.

175 tons, warehouse, for naval air station, Sand Point, Seattle, and bridge in Alaska, to Isaacson Iron Works, Seattle.

150 tons, bridge FAP-118, Webb county, Texas, to Alamo Iron Works, San Antonio, Tex.

150 tons, bridge, Central street, Chippewa Falls, Wis., to Clinton Bridge Works, Clinton, Iowa.

150 tons, sinter crushing plant, American Smelting & Refining Co., Helna Mont., to Minneapolis Moline Power Implement Co., Minneapolis.

145 tons, two warehouse, specification 1097-D, Estes Park and Green Mountain dam, Colo., to Minneapolis-Moline Power Implement Co., Minneapolis.

140 tons, radial and skimmer gates, Central Nebraska Public Power and Irrigation district, N. Platte, Nebr., to Continental Bridge Co., Chicago.

140 tons, north approach, Highland park bridge, Pittsburgh, for Allegheny county, Pennsylvania, to Bethlehem Steel Corp., Bethlehem, Pa.

140 tons, shore front parkway curbs, Rockaway Beach, Long Island, New York, to American Bridge Co., Pittsburgh.

135 tons, bridge, Basault, Colo., to unnamed interest.

130 tons, bridge FAP-FAGH-70, Colorado county, Texas, to Virginia Bridge Co., Roanoke, Va.

130 tons, building, Mundet Cork Mfg. Co., Hillside, N. J., to Breen Iron Works, Union City, N. J.; through White Construction Co., New York.

120 tons, warehouse Hilo Electric Co., Honolulu, to unnamed interest.

120 tons, building, Standard Brands Inc., Worlds fair, New York, to Bethlehem Steel Co., Bethlehem, Pa.; through James Stewart & Co., New York.

120 tons, factory building, Galesburg, Ill., to Joseph T. Ryerson & Son, Inc., Chicago.

115 tons, state bridge, Richwood, Va., to Virginia Bridge Co., Roanoke, Va.

110 tons, Essex control stations, Public Service Electric & Gas Corp., Newark,

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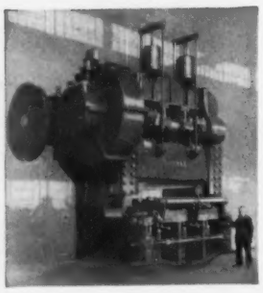

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N. J., to Lehigh Structural Steel Co., Allentown, Pa.

105 tons, steel stringer bridge, Ware river, Palmer, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; C. I. Hosmer, Inc., Greenfield, Mass., general contractor, bids Aug. 19.

100 tons, Turret shop, Philadelphia navy yard, to Belmont Iron Works, Philadelphia.

100 tons, junior high school building, South Norwalk, Conn., to Bethlehem Steel Co., Bethlehem, Pa.; Joseph Lasprogato & Co., South Norwalk, general contractor.

100 tons, addition, main building, naval hospital, Newport, R. I., to Providence Steel & Iron Co., Providence, R. I.; Rowley Construction Co., Pawtucket, R. I., general contractor.

100 tons, Catching Slough Oregon state bridge, to unstated interest; J. W. Hillstrom, Marshfield, general contractor.

100 tons, two 10-ton traveling cranes, Estes Park and Green Mountain Dam, Colo., to unnamed interests.

Unstated tonnage, Wasena bridge, Roanoke, Va., to Wisconsin Bridge & Iron Co., Milwaukee, at low bid of $116,952.

Shape Contracts Pending

12,000 tons, transmission towers, Bonneville dam, Oreg.; bids Sept. 22.

7000 tons, elevated highway and approaches to Meeker avenue bridge, Newtown creek, Brooklyn, N. Y.; bids Sept. 6, president, borough of Queens.

3500 tons, shop building, navy yard, Mare Island, Calif.; bids soon.

2600 tons, piling, North avenue pier, Chicago; Fitzsimons & Connell Dredge & Dock Co., Chicago, low for general contract at $306,087.

2494 tons, piling, United States Engineer office, San Francisco, invitation CP 414-39-1, for Welles Harbor, Midway Island, Pacific Ocean; bids postponed—new call soon.

1500 tons, Lake View housing project, Buffalo; bids Sept. 21, includes 500 tons of joists.

1200 tons, hangar Lowry Field, Denver, Colo.; Madsen Construction Co., Minneapolis, low at $277,000 on general contract.

1192 tons, including 156 tons machinery, High street bridge, Oakland, Calif.; general contract to MacDonald & Kahn, San Francisco at $747,000.

970 tons, addition, Chamber of Commerce building, Houston, Tex.

900 tons, water treatment plant, Minneapolis.

825 tons, state bridge FN-96, Cedar Rapids, Iowa.

780 tons, superstructure, Chickamauga powerhouse, Tennessee Valley authority, Knoxville, Tenn.; bids Sept. 8, direct on steel.

600 tons, Calvin Coolidge high school, board of education, Washington.

600 tons, bridge 31-A over Santa Ana river, Atchison, Topeka & Santa Fe railway, Los Angeles.

520 tons, health and recreation building, Southwestern Missouri State Teachers college, Springfield, Mo.

500 tons, post office, St. Joseph, Mo., bids Sept. 29.

500 tons, Port Allen wharf, Kauai, T. H.; bids Sept. 19.

480 tons, state bridge FAP-165, Kosauqua, Iowa.

450 tons, Red Hook housing project, New York.

400 tons, post office, Reading, Pa.; John K. Ruff Co., Baltimore, low on base bid of $345,450, Aug. 26.

375 tons, dormitory, Greystone hospital, New Jersey.

365 tons, bridges, state of Wisconsin, scattered locations; bids Sept. 13.

350 tons, two warehouses, Scott Field, near Belleville, Ill.; bids in.

350 tons, Nurses home, Jewish hospital, Philadelphia; also 100 tons of bars.

350 tons, three warehouses for Fort Lewis, Wash.; bids in.

325 tons, building, Allis-Chalmers Mfg. Co., LaPorte, Ind.

325 tons, Central Islip hospital buildings, Long Island, N. Y.

319 tons, tunnel supports, relocation Southern Pacific Co. railroad, Central Valley project, Calif.; bids Sept. 21.

300 tons, building, Lummus Co., East St. Louis, Ill.

300 tons, addition, high school, Kearny, N. J.; bids Sept. 14, board of education, Kearny.

300 tons, sheet piling, bulkhead, Grays Harbor, Wash.; Bethlehem Steel Co., Bethlehem, Pa., low.

300 tons, repairs, Williamsburg bridge, New York.

300 tons, Schiller school, Pittsburgh.

275 tons, Missouri building, World's fair, New York.

270 tons, school, Glen Rock, N. J.

250 tons, state bridge over Kentucky river, Letcher county, Kentucky.

245 tons, coach shop, Chicago & Eastern Illinois railroad, Danville, Ill.

215 tons, Houston hall, University of Pennsylvania, Philadelphia.

200 tons, post office, Reading, Pa.; Ruff Contracting Co., Baltimore, low on general contract.

175 tons, bridge 353.34, Nebraska division, Union Pacific railroad, Omaha, Nebr.

168 tons, medical building, Reno, Nev.; K. E. Parker, San Francisco, low.

150 tons, school, Wisomissing, Pa.; bids Sept. 12.

150 tons, bridge, 140-foot trusk span, Bath, N. Y.; bids Sept. 13.

150 tons, Yeadon, Pa., bids Sept. 9, also 100 tons of bars.

146 tons, warehouse, Lowry field, Denver.

140 tons, Jeffrey Canyon power plant, Brady, Nebr.

130 tons, addition to state ferry pier, Mackinaw City, Mich.

130 tons, high school, Ashtabula, O.; bids in.

129 tons, crossing, Yellowstone and in Meagher county, Montana; bids opened.

125 tons, state bridge, Mt. Airy, Pa.; bids Sept. 9.

125 tons, weak acid recovery plant, American Zirconium plant, Baltimore.

125 tons, residence, C. W. Wheelwright, Green Springs Valley, Md.

120 tons, fish hatchery, United States reclamation bureau, Leavenworth, Wash.

103 tons, under-crossing, near Ben Ali, Sacramento county, California, for state; bids Sept. 14.

100 tons, building addition, Lockport hospital, Lockport, N. Y.; bids Sept. 9.

100 tons, store, S. S. Kresge Co., Buffalo; bids Sept. 12.

100 tons, picture house, Blackner Corp., Wildwood, N. J.

100 tons, garage and office, state highway department, Gettysburg, Pa.; bids Sept. 14.

Unstated, Cedar street substation, Tacoma, Wash.; bids Sept. 6.

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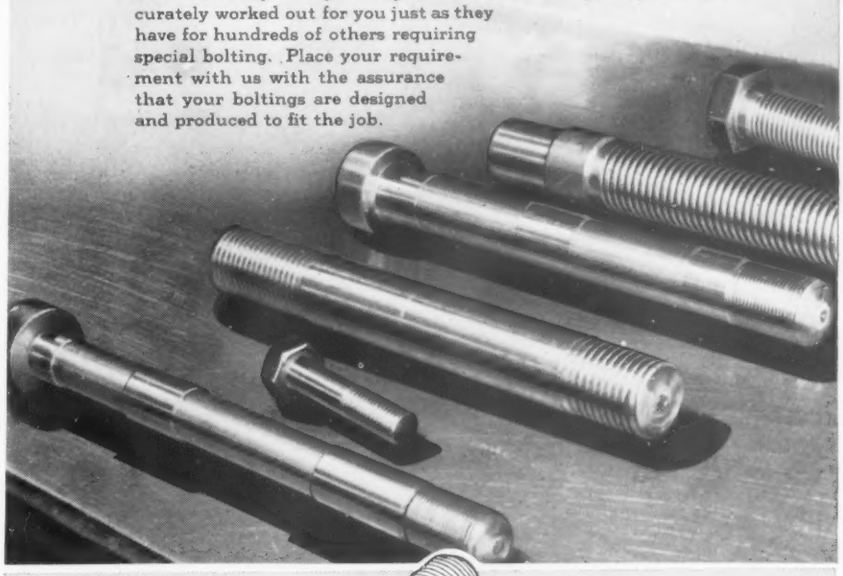

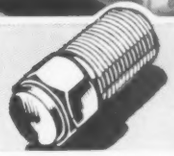

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Reinforcing

Reinforcing Bar Prices, Page 71

New York — Contracts requiring 1500 tons of reinforcing steel are overshadowed by a spurt in new inquiry aggregating approximately 8500 tons closing within the next week. A New York city housing authority project, bids Sept. 12, takes 500 tons of bars and a large volume of building mesh. Award of 852 tons, Queens approach, Meeker avenue bridge, Newtown Creek, Brooklyn, to Jones & Laughlin Steel Corp., Long Island City, is outstanding.

Pittsburgh — Concrete bar market continues active with a fair amount of new projects and a good many placements. The price situation continues to be the big point of interest, although with the increasing number of jobs, prices tend to be firmer on the smaller tonnages. There are a few tonnages soon to enter the market which will swell the total, mostly government jobs.

Chicago — Pending work continues to gain, with a favorable outlook prevailing for coming months. Approximately 90 per cent of current business is made up of public projects. Largest of recent awards is 1203 tons for a building at Fort Knox, Ky. Other large orders include 600 tons for a local street improvement and 600 tons for an Illinois state bridge.

Cleveland — Reinforcing steel needs are limited to small miscellaneous tonnages. However, fabricators anticipate a moderate improvement through September, resulting from a general expansion in federal financed projects. Largest pending project is the West approach to the Main street bridge, Cleveland, involving approximately 1500 tons of bars. Fabricated prices continue weak.

Boston — Led by 540 tons for a Connecticut hospital, reinforcing bar buying, mostly in small lots, is estimated at 800 tons. Pending volume approximates 3000 tons, including a marine hospital, Boston, bridges, schools and miscellaneous construction. Reinforcing bar prices continue soft.

Philadelphia — Sellers are making greater effort to stabilize market at published prices. Projects now being figured mostly involve small tonnages, although a $750,000 job for National Cancer Institute in Maryland is up for bids Sept. 24.

Reinforcing Steel Awards

1203 tons, veterans' administration building, Fort Knox, Ky., to Colonial Supply Co., Louisville Ky.; Great Lakes Construction Co., Chicago, general contractor.

878 tons, bureau of reclamation, invitation B-43,009-A, Calexico, Calif., to Columbia Steel Co., San Francisco.

875 tons, bureau of reclamation, Denver, schedule B-42099-A, to Columbia Steel Co., Denver, at $42,060 f.o.b. Calexico, Calif.

852 tons, Queens approach, Meeker avenue bridge, Newtown creek, Brooklyn, to Jones & Laughlin Steel Corp., Long Island City, N. Y.; Elmhurst Contracting Co., New York, general contractor, bids Aug. 23.

600 tons, Austin avenue improvement, Cicero, Ill., to Olney J. Dean Steel Co., Chicago.

600 tons, state bridge, Lee county, Illinois, to Calumet Steel Co., Chicago.

550 tons, Cloverleaf development, near Brecksville, O., to Patterson-Leitch Co., Cleveland, through Hunkin-Conkey Construction Co., Cleveland.

540 tons, Fairfield state hospital, continued treatment buildings, Newtown, Conn., to Concrete Steel Co., New York; F. H. McGraw & Co. Inc., Hartford, Conn., general contractor.

412 tons, United States Engineer office, Fort Kronkite, San Francisco, to Soule Steel Co., San Francisco.

350 tons, bulding, Hospital for Defectives, Springfield, Mo., to Missouri Rolling Mills Corp., St. Louis.

340 tons, contract 6, beach channel driver, Queens, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; Sprague Construction Co., Long Island, N. Y., general contractor.

278 tons, bureau of reclamation, invitation B-42,101-A, Calexico, Calif., to Bethlehem Steel Co., Bethlehem, Pa.

275 tons, U. S. veterans' hospital, Knoxville, Iowa, to Calumet Steel Co., Chicago.

269 tons, infirmary, Veterans' administration, Palo Alto, Calif., to Truscon Steel Co., San Francisco.

225 tons, auditorium, Little Rock, Ark., to Sheffield Steel Corp., Kansas City, Mo.

225 tons, bars and shapes, building No. 8, veterans' hospital, Indianapolis, Ind., to West Virginia Rail Co., Huntington, W. Va. and Insley Mfg. Co., Indianapolis; Algernon Blair, Montgomery, Ala., general contractor, at $211,276, bids July 26.

205 tons, Winnemac gardens, Chicago, to Inland Steel Co., Chicago.

200 tons, store house, Quantico, Va., to Bethlehem Steel Co., Bethlehem, Pa.; Charles H. Tompkins Co., Washington, general contractor.

185 tons, bureau of reclamation, invitation B-42,108-A, Calexico, Calif., to Columbia Steel Co., San Francisco.

180 tons, foundations, building, Hunter college, New York, to Igoe Bros., Newark, N. J.; A. A. Volk Co., New York, general contractor.

175 tons, McChord field hangars and miscellaneous projects, to Bethlehem Steel Co., Seattle.

175 tons, flood wall, Topeka, Kans., to Sheffield Steel Corp., Kansas City, Mo.

161 tons, federal jail, Denver, Colo., to Colorado Builders' Supply Co., Denver; Mead & Mount Construction Co., Denver, general contractor.

150 tons, coach yard, Eighteenth street, Chicago, Atchison, Topeka & Santa Fe railway to Joseph T. Ryerson & Sons, Chicago.

140 tons, federal jail, Sandstone, Minn., to Truscon Steel Co., Youngstown, O.

Concrete Bars Compared

	Tons
Week ended Sept. 3.....	10,945
Week ended Aug. 27.....	8,331
Week ending Aug. 20.....	11,250
This week, 1937	8,539
Weekly average, year, 1937	6,061
Weekly average, 1938.....	6,748
Weekly average, August..	9,892
Total to date, 1937.....	226,890
Total to date, 1938.....	242,949

Includes awards of 100 tons or more.

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140 tons, quartermaster, Fort Sill, Oklahoma, to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.; also 34,200 square feet reinforcement mesh at 1.85c, delivered.
125 tons, bureau of reclamation, invitation 27,593, Deer Creek, Utah, to Colorado Fuel & Iron Co., Pueblo, Colo.
120 tons, hotel, Galesburg, Ill., to Calumet Steel Co., Chicago.
115 tons, underpass, Chicago, Rock Island & Pacific railroad, Washington county, Iowa, to Sheffield Steel Corp., Kansas City, Mo.
102 tons, Mountain boulevard drainage system, Oakland, Calif., to W. C. Hauck & Co., San Francisco.
100 tons, power plant, Kalamazoo, Mich., to Bethlehem Steel Co., Bethlehem, Pa.
100 tons, hospital, Monroe, Wis., to Bethlehem Steel Co., Bethlehem, Pa.
100 tons, Manhattan ventilation building, Queens mid-town tunnel, New York, to Seaboard Steel Products Co., New York, Cauldwell-Wingate Co., New York, general contractor.

Reinforcing Steel Pending

5000 tons, superstructure, Red Hook housing project, Brooklyn, N. Y.; bids Sept. 12 to New York City housing authority.
2000 tons, invitation 509-39-132, army engineers, Los Angeles; bids Sept. 2.
1450 tons, Lake street tunnel, San Francisco; bids Sept. 21.
1287 tons, place, relocation Southern Pacific railway, Central Valley project, Calif.; bids Sept. 21.
1200 tons, marine hospital, Brighton district, Boston; John Bowen Co., Boston, low on base bid of $1,671,600, Aug. 26, treasury department, Washington.
792 tons, elevated highway and approaches, Forty-fifth to Sixty-fourth street, Queens, N. Y.; bids Sept. 6, borough president, Queens.
565 tons, water and power department, specification 2713, Los Angeles; Columbia Steel Co., San Francisco, low.
530 tons, High street bridge, Oakland, Calif.; MacDonald & Kahn, San Francisco, general contractors.
396 tons, bureau of reclamation, invitation B-47,252-A, Antioch, Calif.; Judson Steel Corp., San Francisco, low.
380 tons, barracks, Fort Knox, Ky., Great Lakes Construction Co., Chicago, general contractor for buildings calling for 250 tons and Struck Construction Co., Louisville, contractor for building requiring 130 tons.
350 tons, Port Allen wharf, Kauai, T. H.; bids Sept. 19.
300 tons, school repairs, Boston.
300 tons, building, Singer Sewing Machine Co., Boston.
250 tons, barracks, Fort Benjamin Harrison, Ind., bids in.
250 tons, school, Malden, Mass.; Rugo Construction Co., Boston, general contractor.
200 tons, highway mesh, Tioga county, New York; bids Sept. 7, Albany.
180 tons, Navy yard, Philadelphia; Bethlehem Steel Co., Bethlehem, Pa., low.
180 tons, waterworks, Jacksonville, Ill.
167 tons, foundations, Triborough hospital, Queens, N. Y.; bids in.
155 tons, procurement division, treasury department, New Orleans; bids in, provision 16274.
150 tons, Emerson high school, Los Angeles; bids Sept. 6.
150 tons, Philadelphia Provision Co., Philadelphia; bids in.
150 tons, school, Medford, Mass.
125 tons, building, Sears Roebuck & Co., Wichita, Kans.
125 tons, sewage disposal plant, Canton, Ill.
125 tons, hospital, Cambridge, Mass.
105 tons, bridge, Lowell-Tewksbury, Mass.; Colman Bros. Corp., Boston, general contractor.
105 tons, highway reinforcement, Warren county, New Jersey; bids Sept. 7, Trenton.
100 tons, North avenue pier, Chicago; Fitzsimons & Connell Dredge & Dock Co., Chicago, low for general contract.
100 tons, gym, Radinor school, Wayne, Pa.

Pig Iron

Pig Iron Prices, Page 72

Pittsburgh — Pig iron production and shipments are improving as foundry activity begins to increase more steadily. Signs of improved foundry business have been evident for some time but the local district foundries have been slow to reflect it.

One reason for this apparent lag has been that there are few jobbing foundries in this territory. The placement of early business by automotive partsmakers has accounted for a fair share of the increase and little of that business is coming into the Pittsburgh area.

Cleveland — Pig iron producers report shipments during August were about 20 per cent ahead of July. The spread is still greater in comparing shipments of foundry coke for the two periods. Sellers expect continuation of the general improvement during September. Operations among miscellaneous foundries reflect gain in consumer demand for their products. Prices are expected to be unchanged for the fourth quarter.

Chicago — Pig iron shipments continue to improve gradually and prospects are favorable for additional gains. The automotive industry will take substantially more castings this month, and jobbing foundries are becoming more active. Farm equipment manufacturers, recently operating on curtailed schedules, plan in some instances to increase production in September. Pig iron consumption in the manufacture of implements and tractors during the balance of the year appears certain to fall well below the rate of the corresponding 1937 period, but there are prospects that requirements will show a gain over the normally quiet summer months.

Boston — Pig iron buying has dwindled, with new orders few, scattered and for small lots. Shipments against contracts are fair, but not impressive. Jobbing foundries for the most part are not consuming more material than two or three months ago.

New York — August will show an improvement in specifications, if not in orders. Some sellers estimate releases will be 10 to 15 per cent greater than in July. Sales, however, have not kept pace with the preceding month, when a number of contracts were entered for third quarter.

Buffalo — Due to better specifications during the last two weeks, pig iron shipments for August are about equal to the July volume. After shipments lagged in the first two weeks of August it was not expected the month would be quite as good as the preceding period. Producers stress the fact that while

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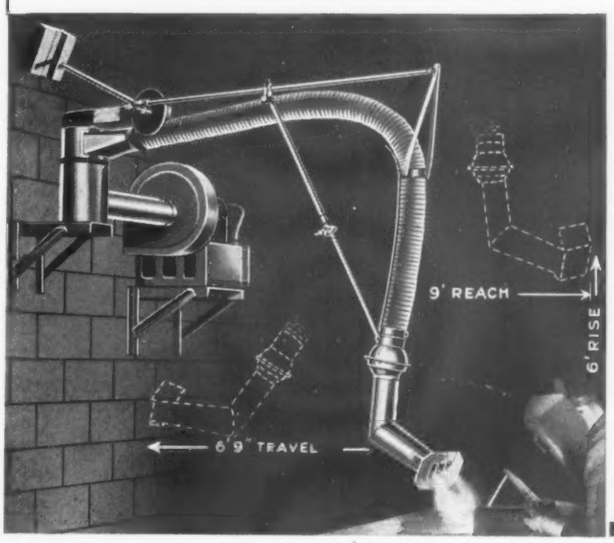
remove fumes, heat and smoke at the source of generation, increasing operators' efficiency and production. The Ruemelin fume collector is very flexible, the arm can be swung in a wide arc with ease instantly. Already installed by many of the largest companies in the country. Get bulletin 37B.



AGENTS
Some Good Territories Open

RUEMELIN MANUFACTURING CO.
3882 N. Palmer St.
Milwaukee, Wis.

shipments have improved, they are still below normal.

Philadelphia — While pig iron producers in this district have not officially opened books for fourth quarter indications point to reaffirmation of prices. Sellers expect further moderate broadening in demand this month. Buying and shipments are expected to show an increase, in view of routine coverage for last quarter.

Cincinnati — Only moderate improvement in pig iron shipments was shown in August, compared to July, but opinion is widespread that a heavier melt will be developed soon after the holiday.

Toronto, Ont. — While there are some indications of betterment in the merchant pig iron market, current demand continues slow and melters are taking iron for spot needs only. Local blast furnace representatives look for larger demand late in September.

Scrap

Scrap Prices, Page 74

Pittsburgh — Scrap consumers show no interest and current sales consist of occasional small lots, much of it distress material. Dealers believe some mills will be forced into the market soon, in view of steadily increased production rates. Sales of small lots have been made at about $15, which is regarded as the dealer buying price. This seems to indicate a spread of $15 to $15.50. This is substantiated by inability of dealers to buy at much under $15 and practically nothing at $14.75.

Cleveland — Steelmakers here are not interested in buying scrap and most activity is in shipments to other consuming areas. Consumers of heavy steel grades down the Ohio from Pittsburgh are buying some tonnage at the market. Railroad offerings are about the same as a month ago. Rails on the Baltimore & Ohio list are said to have brought $16 or a little better.

Chicago — Iron and steel scrap continues to mark time, with prices generally strong but nominal in some instances. Last sale of heavy melting steel was at $14.50, since which time the market has receded 50 cents a ton. Brokers are unable to buy the No. 1 grade at $13.50, however, the minimum quotations now being $13.75.

Boston—Most grades of iron and steel scrap tend to sag slightly. For export, most brokers are resisting efforts to establish heavy melting steel at $13, dock, and are getting some material at $12 with $12.50 paid for tonnage. Close to 5200 tons was loaded at Portland and Boston last week with more boats expected this month.

New York — Most eastern Pennsylvania steel mills are taking small shipments of steelmaking grades of scrap against old orders but new buying is light. Boat loading is also slack. Accumulation of scrap on barges, however, is not heavy as scrap at current prices is not coming out freely. Prices are steady

Philadelphia — Steel and scrap iron is quiet with prices generally unchanged, buyers and sellers marking time until after Labor Day. Small adjustments in grate bars and machine shop turnings are the only changes.

Buffalo — Strength in iron and steel scrap is being maintained chiefly because of continued increase in ingot production. Principal consumers are still out of the market, and generally show reluctance to place orders at prevailing prices. Dealers refuse bids at lower levels and the price on No. 1 heavy melting steel is sustained at $14 to $14.50 a ton in view of the recent sale at $15.

Detroit—Scrap market currently is featureless, chief interest centering on automotive lists now about to be released. Tonnages on the new lists are not up to earlier expectations, but should provide a test of prices. Buying for consumption is slow, although a local steelmaker is putting on more furnaces and may be in the market shortly.

Cincinnati — Iron and steel scrap took on a dull appearance in anticipation of Labor Day, after which both buyer and seller hoped to appraise more clearly nearby requirements and price trends. Prices are nominally unchanged as dealers hold accumulations in confidence that major needs will rise soon.

St. Louis — Recent heavy purchases of heavy melting steel by local mills have had the effect of steadying the market for iron and steel scrap. Aside for 25 cents advance in cast grades, dealer quotations are unchanged.

Toronto, Ont. — Trading in iron and steel scrap is slow with only a few special grades moving. Mills continue to show interest in heavy melting steel while most other steel lines are at a standstill. Foundries and electric furnace operators are taking machinery cast as offered, but supplies are still limited.

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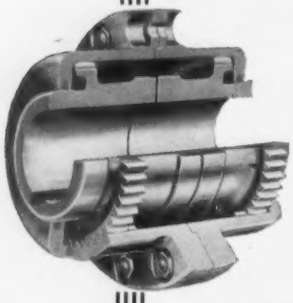

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POOLE FOUNDRY & MACHINE CO.
Baltimore, Md.

Warehouse

Warehouse Prices, Page 73

Cleveland — Warehouse distributors report shipments during August showed a moderate increase over July, despite the slight decline in orders late in the month. Most distributors believe September will register additional gains in both volume and size of orders, reflecting the normal seasonal increase in demand. Prices are firm.

Chicago—August warehouse sales were a shade heavier than in July whereas usually the month shows no better than an even trend. Sales are well diversified, with demand from country areas recently showing a slight increase over city volume.

Boston — Steel warehouses are

booking more orders, well diversified as to products, although purchases are small individually. August volume was considerably better than July with numerous jobbers. Prices are fairly well maintained but with the usual amount of shading by some sources. No. 24 gage uniform blue annealed sheets have been revised to 5.11c for 50-bundle orders, formerly 5.31c, with extras applying for smaller shipments.

New York — Steel warehouse volume in August was slightly ahead of July, a few jobbers, notably one in northern New Jersey, moving specialties largely, reporting a 20 per cent increase in tonnage with dollar totals well up, due to an increase in alloy and special steels.

Philadelphia — Jobbers are still meeting stiff competition from mills on various items but in August their bookings increased in tonnage, with expectation of better sales in September. Demand is still greatly diversified.

Detroit — August business for local warehouse interests probably will show slight improvement over July. Outlook for September is clouded, since the major tool and die programs are out of the way, and later programs are not complete.

Nonferrous Metals

New York—Heavier business is expected to develop in nonferrous metals following Labor day. Domestic consumption of zinc, lead, copper and some other metals already has shown a moderate increase.

Copper—Offerings in foreign and export markets tended to tighten, following easing in the European political tension. with sales reported above the prevailing wire bar equivalent. Export copper closed around 10.12½c, c.i.f. European ports.

Domestic inquiry was fair with prices steady at 10.12½, Connecticut, for electrolytic. September shipments are expected to be exceptionally heavy.

Lead—Consumption is increasing with consumers buying nearby metal at a steady rate. August shipments rose about 1000 tons over the previous month's total with stocks declining. Prices held at 4.75c, East St. Louis, and 4.90c, New York. Tototal stocks in hands of smelters and refiners declined 7577 tons during July.

Zinc—Buying was light here with sales for the week estimated at only about 1000 tons. Prime western held at 4.75c, East St. Louis.

Tin—Trading was restricted by

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound

Aug.	Copper: Electro, del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin, New York: Spot	Straits Tin, New York: Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
27	10.12½	10.25	9.65	43.30	43.50	4.90	4.75	4.75	20.00	11.25	35.00
29	10.12½	10.25	9.65	42.80	43.00	4.90	4.75	4.75	20.00	11.25	35.00
30	10.12½	10.25	9.65	43.25	43.40	4.90	4.75	4.75	20.00	11.25	35.00
31	10.12½	10.25	9.65	43.25	43.40	4.90	4.75	4.75	20.00	11.25	35.00
Sept.											
1	10.12½	10.25	9.65	43.25	43.50	4.90	4.75	4.75	20.00	11.25	35.00
2	10.12½	10.25	9.65	43.00	43.25	4.90	4.75	4.75	20.00	11.25	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 10.12½c Conn. copper

Sheets

Yellow brass (high)	16.75
Copper, hot rolled	18.25
Lead, cut to jobbers	8.00
Zinc, 100 lb. base	9.75

Tubes

High, yellow brass	19.50
Seamless copper	18.75

Rods

High yellow brass	12.75
Copper, hot rolled	14.75

Anodes

Copper, untrimmed	15.50

Wire

Yellow brass (high)	17.00

OLD METALS

Nom. Del. buying prices

No. 1 Composition Red Brass

New York	6.00-6.25
*Cleveland	6.75-7.00
*Chicago	6.25-6.50
St. Louis	5.75-6.00

Heavy Copper and Wire

New York, No. 1	7.75-8.00
*Cleveland, No. 1	7.50-7.75
*Chicago, No. 1	7.75-8.00
St. Louis	7.50-7.75

Composition Brass Borings

New York	5.40-5.75

Light Copper

New York	6.22½-6.50
*Cleveland	6.00-6.25
*Chicago	6.25-6.50
St. Louis	5.75-6.00

Light Brass

*Cleveland	3.50-3.75
Chicago	4.25-4.50
St. Louis	4.00-4.25

Lead

New York	4.00-4.25
Cleveland	3.75-4.00
*Chicago	4.25-4.50
St. Louis	3.50-3.75

Zinc

New York	2.50-2.62½
Cleveland	2.25-2.50
St. Louis	2.50-2.75

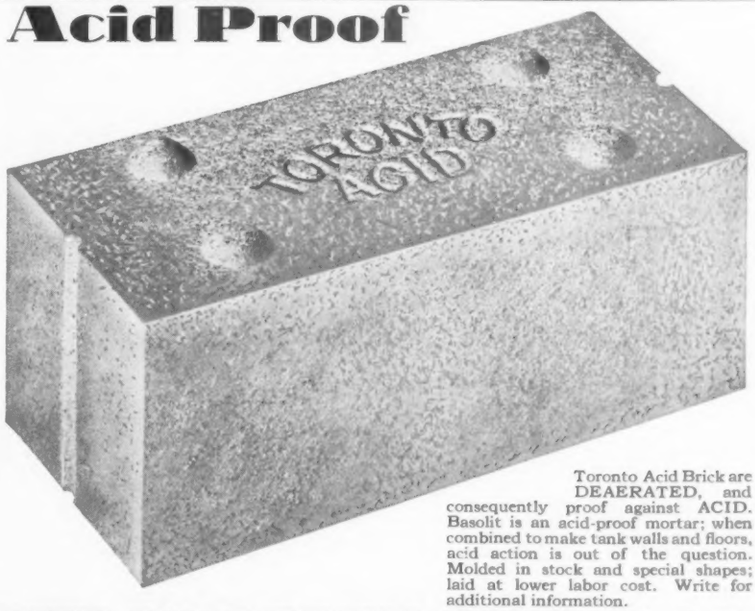
Aluminum

Borings, Cleveland	6.25-6.50
Mixed, cast, Cleveland	8.75-9.00
*Clips, soft, Cleveland	12.75-13.00
Mixed cast, St. Louis	7.75-8.00

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads	10.75
Standard No. 12 aluminum	13.75-14.25

Acid Proof



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Steubenville, Ohio (Pittsburgh District)

lack of interest on the part of consumers and an unfavorable price relationship with the Eastern market. Straits spot closed at 43.00c.

Iron Ore

Iron Ore Prices, Page 74

Cleveland — Shipments of iron ore from upper lake ports during August amounted to 3,325,715 tons compared with 3,267,813 tons in July and with the all-time record of 10,811,381 in August, 1937. Total tonnage during August represents the highest monthly shipment to date this season. However, it is 69.2 per cent below the comparable 1937 period. Shipments for this year to Sept. 1 were 10,872,490 tons, against 45,438,131 tons to Sept. 1, 1937, a decrease of 76 per cent.

Shipments for the season to Sept. 1 in 1938 and 1937, as tabulated by the Lake Superior Iron Ore association, follow:

Port	To Sept. 1, 1938	To Sept. 1, 1937
Escanaba	559,315	2,177,952
Marquette	554,128	3,534,986
Ashland	1,112,429	4,029,076
Superior	3,933,842	15,836,513
Duluth	2,363,128	12,547,250
Two Harbors..	2,349,648	7,312,354
Total	10,872,490	45,438,131

Steel in Europe

Foreign Steel Prices, Page 73

London — (*By Radio*) — General dullness prevails in the iron and steel market in Great Britain. Prices of pig iron are expected to remain at the present level until the end of the year. Most users have substantial stocks of iron in yards. Steel trade is inactive but heavy works still have tonnages booked on previous contracts.

The Continent reports export markets quiet. Scandinavia and South America now are taking best tonnages. Prices are steadier and fall prospects are brighter.

Tin Plate

Tin Plate Prices, Page 70

Pittsburgh — Tin plate is the only market in which price is a factor at present. Adjustment is expected soon, to apply after the close of the contract year in October. Buying is being held at a minimum by this uncertainty and some users are running short.

Trend to Steel in Aircraft Construction

(*Concluded from Page* 17)

largely have been overcome. Most of the magnesium alloys used in aircraft are in the form of castings, which are susceptible to an increase in physical properties by heat treatment.

At the present, use of magnesium alloys generally is limited to relatively secondary parts and interior appointments. Results of service tests in progress will be the deciding factor in deciding how much will be used in the future.

STEEL acknowledges the co-operation of the following companies for supplying information on trends and uses of metals in aircraft construction: The Glenn L. Martin Co., Baltimore; Consolidated Aircraft Co., San Diego, Calif.; Douglas Aircraft Co. Inc., Santa Monica, Calif.; Boeing Aircraft Co., Seattle, Wash.; American Steel & Wire Co., Cleveland; Dow Chemical Co., Midland, Mich.

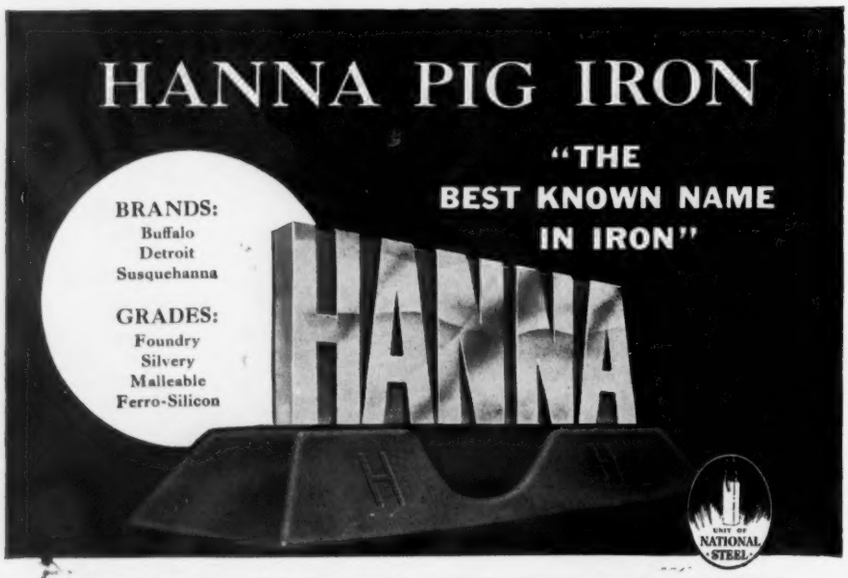
Equipment

New York — Domestic machine tool orders with most dealers and shops in the East increased slightly during August, topping July volume by a narrow margin, while the latter month was better than June. The improvement is gradual with scattered orders for one or two tools at a time. Better buying by the airplane industry is noted and some equipment still is pending for at least one maker of bearings. A considerable volume has been figured on which releases are expected this month. Shops with foreign orders are sold up on some lines through the remainder of the year. This is true of two in the Cincinnati district. Deliveries on standard machines for domestic delivery are normal, with some builders able to ship various units from stock.

Boston—Another flurry in foreign buying has brought substantial orders to several New England machinery builders, Russia, Japan and to a lesser degree England, are placing considerable volume for early delivery. While some orders are being taken for November shipment, others will not go out before December. Domestic buying is light, one or two tools at a time being placed. A New Jersey airplane engine builder is still buying equipment, but has completed most purchases against a recent inquiry.

Cleveland — August machine tool and equipment sales generally were on a par with those of July, with some sellers noting a slight increase. End of the vacation season is expected to bring a moderate improvement during coming months. Forecasts range from a 15 per cent to 30 per cent increase over July and August. Most dealers believe the gain will be sustained at least until the year's end.

Chicago—Expectations of more active demand for machine tools and plant equipment during coming months are based almost entirely upon recent gains in general business activity, since inquiries and orders for machinery have yet to disclose any marked betterment. Some machine tool sellers report an increase in sales during August, though the comparison is with the poor July showing.



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Buffalo Detroit New York Philadelphia Boston

Construction and Enterprise

Ohio

COSHOCTON, O.—REA has allotted grant of $294,000 to Muskingum Valley Farm Bureau Electric co-operative, L. E. Buehler, superintendent, covering total cost of 284-mile extension rural transmission lines.

GENEVA, O.—Village, A. L. Hillman, mayor, has been granted $47,250 by PWA for additions to sewage disposal plant. Project to cost $100,000 and includes pump house changes, new clarifiers, new filters and digesters. George Gascoigne & Associates, Leader building, Cleveland, consulting engineers.

GRAND RAPIDS, O.—Village, H. W. Billings, mayor, plans construction of waterworks system. Consulting engineers Champ, Finkbeiner & Associates are making survey.

MARIETTA, O.—City, F. A. Steadman, service director, will take bids, due Sept. 29 on water plant with daily capacity up to 3,000,000 gallons, to cost $324,716. Equipment to include softening, purifying and stabilizing installations, 100 fire hydrants, 6-inch lines, storage reservoir, booster system. Consulting engineers, Burgess & Niple, 568 East Broad street, Columbus, O.

NEW CONCORD, O.—Guernsey-Muskingum electric co-operative is preparing plans and specifications for construction of 273 miles of rural transmission lines; bids about Sept. 13. Cost estimated at $274,000. Maurice Scharff, 1 Wall street, New York, project engineer.

PORT CLINTON, O.—PWA has approved grant to village, Fred Slaughterbeck, mayor, for waterworks to cost $100,000. Harry A. Smith, city engineer.

POWHATAN POINT, O.—Village, J. K. Goodhue Jr., mayor, will take bids soon on waterworks to cost $82,933. Carl Simon, Van Wert, O., consulting engineer. PWA has approved $45,000 grant.

SANDUSKY, O.—City, E. E. Hartung, city engineer, is taking bids due at noon, Sept. 8, on 42-inch water works intake into Lake Erie, length 8018 linear feet to crib. Greeley & Hanson, Chicago, consulting engineers.

SHELBY, O.—PWA has allotted grant of $90,000 on electric light plant improvements to cost $200,000. J. P. Adkins, city engineer.

ST. MARYS, O.—Village, Mont Youngs, auditor, has applied to PWA for grant towards additions to electric light plant costing $90,000.

Pennsylvania

BUTLER, PA.—PWA has approved grant to borough on construction of addition to sewage treating plant to cost $216,500. Plans call for screen chamber, pumping station, trickling filters, settling tank and sludge digestor equipment.

SHARPSVILLE, PA.—Borough has been given PWA grant on sewage treatment plant to cost $118,000. Chester Engineers, Century building, Pittsburgh, consulting engineers.

ZELIENOPLE, PA.—PWA has approved a grant to the borough for a $38,760 project involving alterations in sewage disposal plant tanks; installation of trickler tanks and pumps. Chester Engineers, Century building, Pittsburgh, consulting engineers.

Michigan

CASSOPOLIS, MICH.—REA has allotted $688,000 to Fruit Belt Electric co-operative for construction of 588 miles of power lines in Berrien, Cass, St. Joseph and Kalamazoo counties.

HOLLAND, MICH.—Board of public works has applied to PWA for grant for construction of a municipal light and power plant to cost $1,500,000. Project calls for a 15,000 kilowatt generator. Preliminary plans by Hamilton & Weeber, Grand Rapids, Mich., engineers.

HUDSON, MICH. — City will vote Sept. 20 on bond issue of $60,000 for construction of contemplated sewage disposal plant. PWA grant of $33,000 applied for. Frank Therox, East Lansing, Mich., consulting engineer.

KALAMAZOO, MICH. — Sutherland Paper Co., L. W. Sutherland, president, is drawing plans for construction of a factory addition to cost approximately $180,000.

KALAMAZOO, MICH. — Kalamazoo Paper Co., A. E. Curtenius, president, announces $400,000 plant modernization program. Plans call for purchases of $250,000 in machinery and equipment.

NEWBERRY, MICH. — State hospital will build new power plant and distribution system and purchase equipment costing about $350,000. PWA has allotted grant of $157,500. Harold Smith, state budget director, will open bids Sept. 13. E. R. Little Co. Inc., Detroit, are the engineers.

Connecticut

ANSONIA, CONN. — Farrel-Birmingham Co. Inc. is building 4000 square feet of additional foundry space at its plant. The new equipment to be installed includes a 15-ton traveling crane, a large molding machine and a modern sand-handling system. (Noted Aug. 15).

New York

ENDICOTT, N. Y.—International Business Machines Corp. will open bids sometime this month on factory, 160 x 452 feet, costing $500,000. J. M. Demarest is engineer.

SYRACUSE, N. Y.—Church & Dwight Inc., A. C. Schroeder, plant manager, will begin construction immediately of an ultra-modern five-story food products plant. Work is also to begin on a plant subway and other building additions. Total cost to be above $2,000,000.

Illinois

CHICAGO — Reflector Hardware Corp., 2245 South Western avenue, is taking bids on a three-story addition to its plant. Taussig, Flesch & Associates, Chicago, architects.

Alabama

BIRMINGHAM, ALA.—Sherman Concrete Pipe Co., T. A. Fagaly, manager, Montgomery, Ala., is establishing a pipe manufacturing plant to cost about $25,000.

Maryland

BALTIMORE—Chemical Pigments Co., 6401 St. Helena avenue, is having plans prepared for one-story, 40 x 100-foot laboratory and boiler house. Cost estimated at $75,000.

District of Columbia

WASHINGTON — Bureau of supplies and accounts will receive bids to Sept. 9 at 10 a. m. on schedule 4279, two turret lathes; schedule 4280, molding machine; schedule 4282, five engine lathes; schedule 4284, two turret lathes; schedule 4287, tool room lathe.

Kentucky

CRAB ORCHARD, KY.—PWA has approved grant toward construction of $53,418 waterworks system; docket No. 1323; plans provide for spring supply, pumping station, reservoir, tanks and distribution system.

Florida

JACKSONVILLE, FLA.—United States Gypsum Co., 300 West Adams street, Chicago, is reported planning to build a $1,000,000 plant on the Trout river here.

Georgia

HARTWELL, GA.—Hart County Rural Electrification association has been allotted $266,000 by REA for power line construction.

RAYLE, GA.—REA has allotted $217,-

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000 to Rayle Electric association for construction of 232 miles rural transmission lines.

Mississippi

ROSE HILL, MISS.—Southern Pine Electric Power association has secured a $593,000 REA allotment for building 611 miles of rural power lines.

Virginia

BOYDTON, VA.—Mecklenburg Electric Corp. has received a $215,000 REA allotment for construction of 204 miles of transmission lines.

LEXINGTON, VA. — REA has allotted $161,000 for building of electric power lines in three counties. James Clarkson, Millboro, Va., is engineer in charge.

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Missouri

ROLLO, MO.—City has PWA grant of $22,910 toward construction of sewage treatment plant estimated to cost $50,910. Docket No. 1475.

ST. LOUIS—P. D. George Co., 4153 Bingham street, is planning a one-story addition to its plant for storage and distribution purposes. Cost with equipment is estimated at $45,000.

ST. LOUIS—J. B. Watkins Quality Products Co. has received from R. P. Buchmueller, 551 McKnight road, final plans of its projected three-story, 36 x 82 feet food products plant. Building is to cost $65,000. (Noted Aug. 1).

Arkansas

PINE BLUFF, ARK.—REA has made a $100,000 allotment to Arkansas Power & Light Co. for power line construction totaling 150 miles.

Oklahoma

HEALDTON, OKLA.—Shell Petroleum Corp., St. Louis, plans expenditure of $100,000 for expansion and improvements of gasoline plant here. Will install absorption type machinery and auxiliary equipment and enlarge steel storage tank facilities.

SALINA, OKLA. — Grand river dam authority, City hall, Vinita, Okla., R. L. Wright, general manager, is drawing plans for a hydroelectric power plant on Grand river. Project includes power dam, generating station, power substation, switching units and transmission lines. Cost is to be about $4,500,000, approximately $2,025,000 being federal grant. Holway & Neuffer, Tulsa, Okla., consulting engineers.

Wisconsin

LANCASTER, WIS. — Grant county co-operative rural electric group has received $257,000 allotment from REA for construction of rural transmission lines.

LANCASTER, WIS. — Grant county board is preparing to erect and equip highway garage and machine shop to cost $80,000; application has been made for PWA grant.

Minnesota

ALEXANDRIA, MINN. — City, H. S. Campbell, clerk, has been allotted PWA grant for an addition to power plant to cost about $165,000. Equipment will include new boiler and coal and ash handling systems. Burlingame, Hitchcock & Estabrook, Minneapolis, are the engineers. (Noted Aug. 8).

BUFFALO, MINN. — City, W. C. Keinholtz, mayor, proposes construction of municipal light, heat and power plant to cost $90,000, and has applied to PWA for a grant. G. M. Orr & Co., Minneapolis, is consulting engineer.

HOPKINS, MINN.—Reid-Murdoch Co., Chicago, plans construction of large canning plant and installation of considerable machinery and equipment; total cost to be around $200,000.

MINNEAPOLIS — PWA has granted city $328,590 for a four-story addition to the Miller vocational school to cost about $730,200 and providing 41 shop and class rooms. J. F. Gould is business superintendent of the board of education.

MORTON, MINN. — Village, E. L. Hagen, clerk, is taking bids to Sept. 12, at 7:30 p.m., on construction of six-unit sewage treatment plant consisting of pump house and control room, preliminary and secondary clarifier units, etc. Plans are obtainable from engineer E. G. Briggs, 1955 University avenue, St. Paul; certified check 10 per cent to accompany bids. (Noted Aug. 1).

NORTHFIELD, MINN. — City, John Larsen, clerk, plans construction of municipal power plant and electric system to cost $356,000, and has sent application to PWA for grant. Consultant is Buell & Winter Engineering Co., Sioux City, Iowa.

ROCHESTER, MINN. — City, A. L. Glabe, clerk will apply for PWA grant in construction of a sewage disposal plant to cost about $500,000; Ellerbe & Co., St. Paul, is preparing preliminary plans.

STEWARTVILLE, MINN. — City, G. W. Ellison, clerk, has authorized consulting engineers, Burlingame, Hitchcock & Estabrook, Minneapolis, to make a survey for construction of a municipal power plant to cost about $120,000.

Texas

GOOSE CREEK, TEX.—City council has authorized Mayor J. H. Meek to file application for PWA loan and grant to build municipal light plant; authorized Garrett Engineering Co., Box 1726, Houston, Tex., to make survey.

MISSION, TEX.—R. W. Lindsey proposes construction of a two-story addition to his processing plant for which plans are already drawn.

ROBSTOWN, TEX.—City, John W. Kellan, mayor, has filed application with PWA for a grant on a proposed light and power plant and distribution system, estimated to cost $350,000. Consulting engineers, Garrett Engineering Co., Box 1726, Houston, Tex.

WILLIS, TEX.—City, R. E. Watson, mayor, plans construction of a waterworks project, estimated cost being $54,454. Application has been made to PWA for a loan and grant. Garrett Engineering Co., Houston, Tex.

Kansas

PAOLA, KANS.—City, A. A. Bryan, mayor, is applying at once for PWA grant in construction of power plant and distribution system to cost $240,000.

WAMEGO, KANS. — City, M. C. Balderson, mayor, has plans for installation in its power plant of new equipment costing $50,000, and has applied to PWA for grant. Paulette & Wilson, Salina, Kans., are consulting engineers.

WINFIELD, KANS. — PWA has approved allotment to city, L. P. Ravenscraft, mayor, for additions to its power plant and improvements including 2000 kilowatt turbo-generator and condensers; cost to be $177,000. Black & Veatch, Kansas City, Mo., consulting engineers.

YATES CENTER, KANS. — City, C. G. Plumb, mayor, has filed application with PWA for a grant in the proposed construction of a sewage disposal plant to cost $30,000. Paulette & Wilson, Salina, Kans., consulting engineers.

North Dakota

MINOT, N. DAK. — State board of administration, Bismarck, N. Dak., will receive bids about Oct. 1 for removal of two boilers, installation of two new boilers, pumps, preheaters, and building alterations costing $63,600. A. B. Welch is executive secretary. W. F. Kurke, Fargo, N. Dak., engineer. (Noted Aug. 29).

SHERWOOD, N. DAK. — City, Harry Marsland, mayor, plans construction of a waterworks to cost $70,700, and has filed application with PWA for a grant.

Lium & Burdick, Grand Forks, N. Dak., consulting engineers.

VALLEY CITY, N. DAK. — State board of administration, A. B. Welch, executive secretary, Bismarck, N. Dak., will be ready for bids about Oct. 1 for one new boiler, three pumps, controls and preheaters. Cost to be about $30,900. W. F. Kurke, Fargo, N. Dak., is engineer. (Noted Aug. 29).

South Dakota

HOT SPRINGS, S. DAK. — South Dakota Electric Corp., Dean W. Loucks, state engineer, is seeking a PWA grant and loan for contemplated dam and electric power plant to cost $9,000,000.

SIOUX FALLS, S. DAK. — City, C. M. Whitfield, auditor, has filed application with PWA for a grant in construction of a sewage disposal plant to cost $128,170. R. E. Bragstad, city engineer.

Nebraska

KEARNEY, NEBR. — REA has given $87,500 allotment to Buffalo county power district, Justus Johnson, secretary, for construction of rural power lines. Bids will be taken about Sept. 6. Robert Fulton, 2327 S. 19 street, Lincoln, Nebr., engineer.

Iowa

HAZELTON, IOWA — City will vote Sept. 8 on bond issue for construction of waterworks to cost $30,000, for which PWA funds are already allotted. Arthur Selka is mayor. Consulting engineer is R. W. Gearhart, Cedar Rapids, Iowa.

LA PORTE, IOWA — City, George Bangor, mayor, has filed application with PWA for a grant in the construction of a sewage disposal plant costing $48,000; engineer is C. M. Stanley.

MUSCATINE, IOWA — City planning improvements of its electric light plant to cost $482,400, and has applied for PWA grant, W. R. Thorson is plant manager.

WEBSTER CITY, IOWA — PWA has alotted a grant to the city, E. R. Compton, city manager, for construction of a sewage treatment plant costing $144,000. Currie Engineering Co., Webster City, is consultant.

Wyoming

AFTON, WYO. — PWA has allotted a grant to the city in the construction of a sewer system and disposal plant to cost $59,090. Ivan Call, city engineer.

SHERIDAN, WYO. — PWA has allotted a grant to the city, R. W. Orr, mayor, for improvements in its sewage system to cost $290,360.

Montana

FORT PECK, MONT. — Additional allotment of $1,700,000 has been made to finance power development in Fort Peck project. Major Clark Kittrell is district engineer for U. S. war department.

Pacific Coast

LOS ANGELES — Certificate to conduct business under name of Junior Steel Co. has been issued to Roy Badt, Los Angeles.

LOS ANGELES — Pennsylvania Iron & Steel Co., 2308 Santa Fe avenue, will build a warehouse, 60 x 160 feet, costing about $8500.

LOS ANGELES — Austin Co., 777 East Washington boulevard, has been awarded the contract for construction of Federated Metal Corp. plant addition, 90 x 120 feet, costing $38,000. (Noted Aug. 1).

LOS ANGELES — Certificate to conduct business under the firm name of Vimcar Steel Sash Co. has been given to the owner, V. C. Carter.

LOS ANGELES — Austin Co., 777 East Washington boulevard, has the contract to construct a two-story office and experimental building for Technicolor Motion Picture Corp.; area is to be 50 x 233 feet.

EUGENE, OREG. — City proposes construction of a $600,000 power plant and has applied for PWA assistance.

GRAND COULEE, WASH. — Coulee Dam Electro-Metallurgical Corp. has been formed by A. A. Elmore and associates to engage in mining; capitalized at $50,000.

SPOKANE — Alloway & George have been awarded contract for construction of central heating plant powerhouse and steel storage shed for Great Northern railway center at Hillyard, costing $250,000. Project includes two stoker-fired boilers and a smokestack, 229 feet high, to be awarded under separate contracts by St. Paul headquarters.

TACOMA, WASH. — Union Oil Co. will take bids soon on $100,000 distributing terminal calling for wharves, warehouse and storage tanks.

FAIRBANKS, ALASKA — PWA has approved a grant for construction of proposed power plant costing $60,700 at University of Alaska.

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*Republic Steel Corp., Dept. ST, Cleveland, O.
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Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Much Labor Harmony

To the Editor:

Employers and employes are not always at war with each other, as might be thought from reading newspaper accounts of labor troubles. In more cases than not they co-operate for the good of both. Employers are helpful and employes appreciate this attitude and do their part to help.

I was reminded of this when I read the statement of Thomas I. Parkison, president, Equitable Life Assurance society, speaking on Labor day.

"Group life insurance," he said, "extending the employe's pay envelope in the event of death, is now the rule rather than the exception in American industry and wide adoption of the supplemental group coverages is the next logical step. During the first eight months of 1938 the Equitable registered its best group insurance production, measured by the number of applications from employers throughout the country.

"One of the most significant features in the establishment of all types of group insurance is the whole-hearted participation of American workers in contributory plans. Few group installations in the last few years have resulted in less than 95 per cent of employes participating and in innumerable cases participation has been 100 per cent. The present marks an all-time high in employer-employe co-operation in security programs."

This is evidence from an observer in a position to see the entire situation, and to draw conclusions representing the wide field. Most employers seek to aid their employes and most employes appreciate and enter into the spirit of the effort. This is only one instance of the community of interest between capital and labor.

I have some of the group insurance paid by my employer and also some for which I pay, at a rate much lower than I could obtain without the company's help.

A WORKER

Cleveland

Steel House Needs Boost

To the Editor:

The steel industry, as far as it has an interest in promoting the use of steel in construction of steel houses and other structural units entirely of steel, has a large task before it in overcoming efforts to limit progress in this direction.

An important angle is the opposition of building trades as evidenced in the recent action of the city council of Chicago, (STEEL, Aug. 29, p. 17) which eliminated such structures from its building code. Pressure by labor interests is believed to have brought this action. The argument of the unions is that prefabricated steel units can be erected by unskilled labor, thus depriving carpenters, masons and other skilled workers of a share of their work.

Those portions of the steel industry interested in promoting the steel house have a task in educating the public to the advantages of this new construction, to arouse sentiment against such action.

It has another duty also, to develop a type of building that will appeal to all from the standpoint of appearance. This has been done to a great degree in the case of industrial and commercial structures, and similar development in residential building will hasten the day of the steel house. Much has been done along this line but more remains to be done.

STEEL BUILDER

Chicago.

Steel Triumphs in Air

To the Editor:

As I watched the contestants in the Thompson trophy race at the national air races in Cleveland last Monday I understood why the tendency of airplane manufacture is toward use of steel (STEEL, Sept. 5, p. 15).

When we consider that every contender in this 300-mile grind traveled considerably more than that distance, taking into account the swings at the pylons, it was a tribute to the endurance of modern steels in ship and engines. Speeds that approached close to 300 miles per hour were maintained without a failure. Nothing but materials suited to these particular strains would have sufficed to stand the punishment of sustained speed and the succession of sharp turns.

It could not have been mere chance that every starter also finished the race, and every engine stood up to its duty without failure.

It has been claimed that the war brought out alloy steels earlier than they would have been developed in the ordinary course of events. It has been said the automobile classic at Indianapolis each Memorial day has improved the automobile by showing weaknesses of materials and construction. The Thompson race may well be regarded as the proving ground of the metallurgist and designer and their work must be well done to give a perfect score.

This race seemed to me to be a triumph for steel. Perhaps I was thinking of the material with which I am familiar where others may have taken that for granted and paid more attention to the human element concerned in operating the planes. Yet without near perfection in equipment no human ability could have obtained the result.

METALLURGIST

Buffalo

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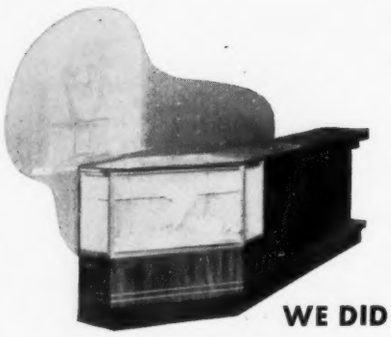
says the *Container Industry,* with cans and pails, tanks and boxes, cases and drums of steel that give better protection to a countless variety of products in common use.

WE DID...

says the *Dairy Equipment Industry,* with a new seamless bottom milk can—that has greater strength, lasts longer, stands up better in service, and is easier to clean and keep clean.



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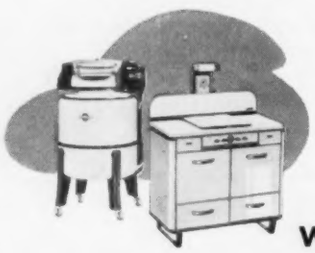
says the *Store Fixtures Industry*— and gave added beauty, longer service life, and greater sales appeal to our products—and greater satisfaction to our customers.

WE DID...

says the *Construction Industry* — and provided strong, sturdy steel framing that is shrink proof, termite proof, fire resistant — and can be erected quickly and easily.



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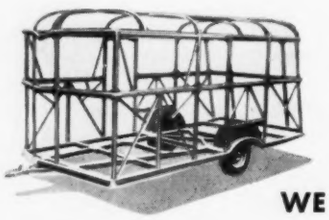
says the *Household Appliance Industry* — and gave our products added beauty, efficiency and economy—a potent aid to sales.



WE DID...

says the *Trailer Industry* — and speeded up production, cut manufacturing costs, and provided a better, stronger product at a lower cost.

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